

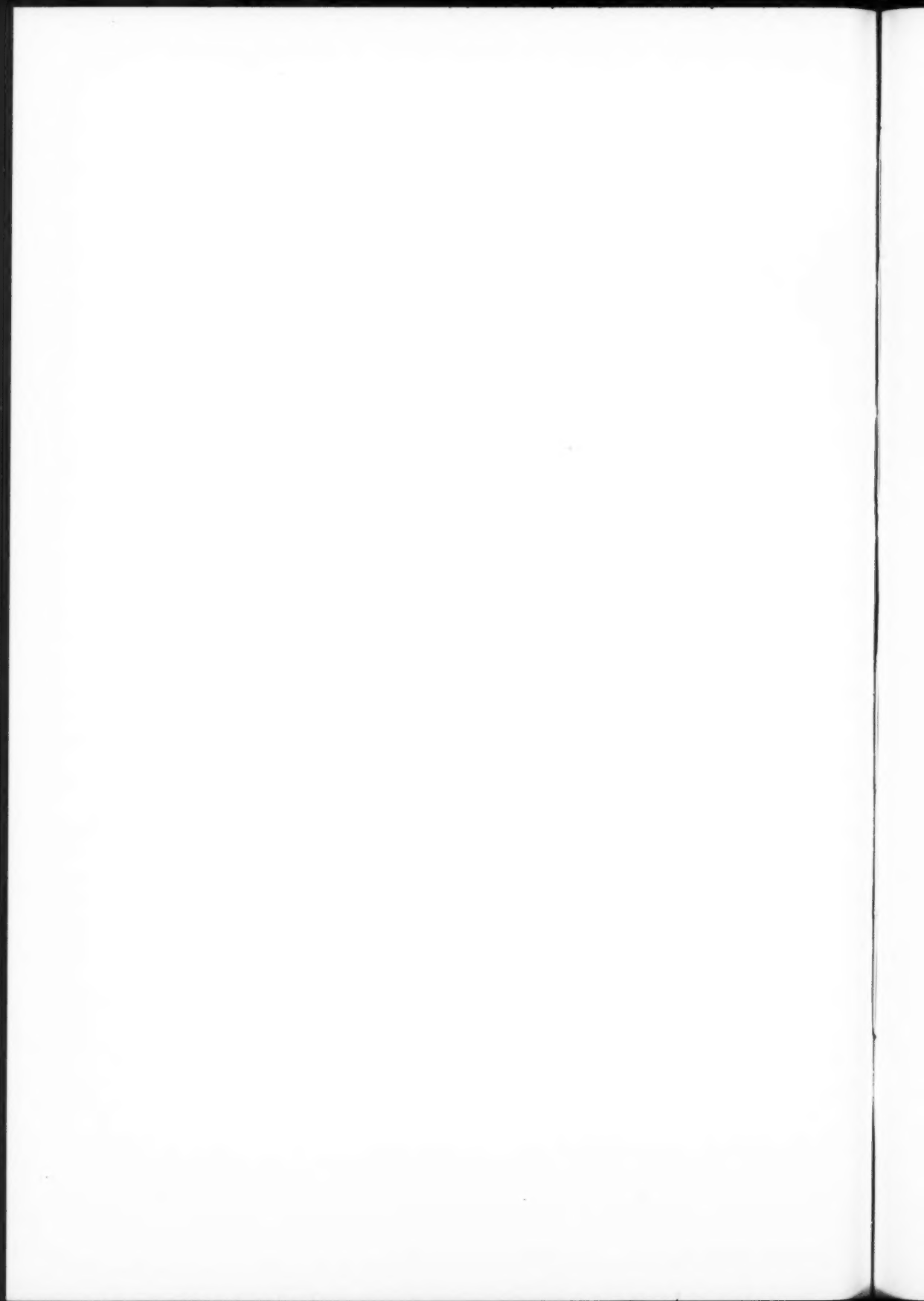
Dental

Abstracts

a selection of world dental literature

AMERICAN DENTAL ASSOCIATION

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Dental

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A selection of world dental literature

Lon W. Morrey, D.D.S., editor

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1. *To present a selection of pertinent literature representative of all points of view within the profession;*
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3. *To supply enough data in each abstract and digest that the reader may determine whether he wishes to refer to the original article for more complete information.*

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General

Determination of interceptive contact points and guidance of functional selective grinding: a new instrument

Mario Spirgi. *Parodontol., Zürich* 13:22-29
Jan. 1959 [in French]

In routine dental practice, abrasive and coloring materials such as typewriter ribbon, articulating paper, emery paper and dyed cloth are used frequently and have proved useful and often even indispensable aids in many diagnostic procedures.

In prosthodontic practice, such materials are used to control and balance dentures; in periodontal practice, to determine the centric occlusion and to establish the presence of interceptive

contact points or to guide functional selective grinding; in operative dentistry, and in crown and bridge work to reveal the occlusal relations.

These materials are difficult to keep in their proper place in the mouth because they are easily displaced during articulating movements. Especially in the molar region where visual control is almost impossible, even slightly displaced coloring materials may produce erroneous marks.

A new instrument was constructed in the periodontal department of the Institute of Dental Medicine of the University of Geneva, Switzerland, which permits adequate fixation of various coloring or abrasive materials and prevents completely any displacement during the movements of the muscles. The instrument is rigid and acid resistant, and it can be adapted for use in patients with all possible types of dental arches. It cannot obstruct even the most extreme articulating movement, does not injure any of the oral tissues and can be easily manipulated.

Figure 1

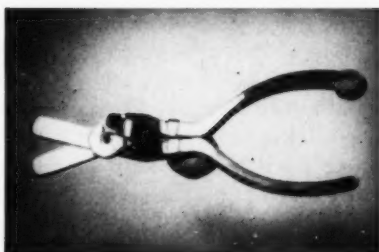
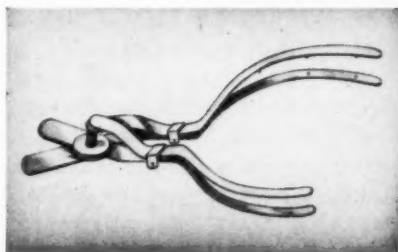
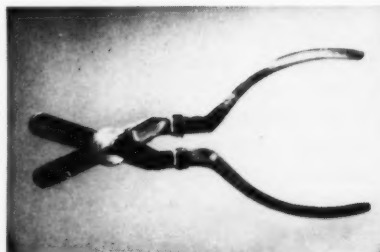
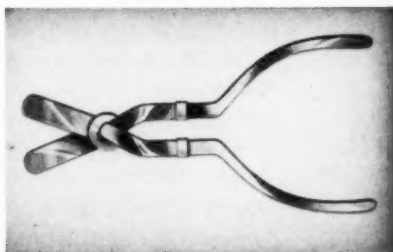


Figure 2

Figure 3

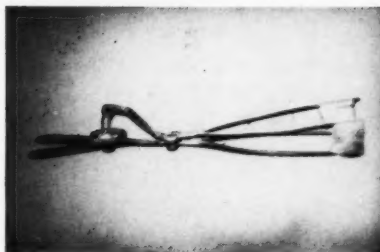
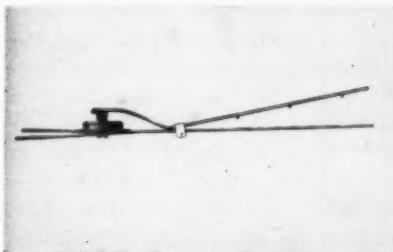


Figure 4



Figure 5



By study of a large collection of cast models, the possible variations of dental arches were determined so as to create an adaptable instrument which, when used experimentally and clinically, proved to be applicable with all possible arch dimensions.

Two primary symmetrical bars (each 1 mm. thick) are articulated at one end by a screw, forming a horseshoe arch (Fig. 1). After the dimensions of the dental arch are determined, the bars are locked by turning the screw (Fig. 2). Secondary bars, attached to the primary bars by hinges, form two symmetrical half arches each consisting of two parts. A removable spring controls the movements of the secondary bars. When the ends of the bars are pressed, the spring activates the hinges, thereby elevating the secondary bars to the desired opening up to 20 degrees (Fig. 3).

After the spring is released, the secondary bars approach the main bars, thereby creating space about 1 mm. wide near the end of the hinge. Besides the various coloring materials, baseplate wax also can be inserted, thereby permitting the determination of the occlusion by using Vauthier's baseplate wax method.

Coloring material and baseplate wax are cut exactly to the size of the dental arch examined, and clamped between the upper and lower bars.

To facilitate clinical use, the various coloring and abrasive materials or baseplate wax may be pre-cut to three sizes, small, medium and large.

The dimensions of the patient's dental arches are determined by inserting first the unloaded instrument into the mouth and by regulating properly the exact distance between the half arches. After the correct data are obtained, the screw may be tightened and the coloring or abrasive materials inserted between the upper and lower bars of each half arch (Fig. 4, left).

The instrument, held by the dentist, is placed in the patient's mouth. The rounded tips of the horseshoe bars prevent irritation of the sensitive oral tissues, and should touch the anterior edges of the rami. With blotting paper mounted in the instrument, the patient is asked to execute forward and lateral jaw movements until the dorsal tooth surfaces are dried. The blotting paper is removed and replaced by articulating paper (Fig. 4, right). The patient holds the instrument and again is asked to open and close his mouth until the markings are obtained. After centric occlusion is determined, defects are corrected by functional selective grinding. The patient now has to execute lateral and forward jaw movements until the articular defects have been detected with the instrument held by the dentist. The defects then are corrected by functional selective grinding.

This grinding can be accomplished by inserting fine or medium emery paper (or cloth) in the instrument. During this procedure the patient may hold the instrument. (Fig. 5, left). The instrument, however, has to be turned to permit the abrasive surface to contact each dental arch.

At the Institute, the instrument has been used routinely for several months for the study and treatment of traumatic occlusion and articulation in periodontal practice, for balancing dentures (articulating paper) and for grinding artificial teeth (emery paper) in prosthodontic practice, as well as in crown and bridge work for registering interceptive contacts (Fig. 5, right).

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A portable step forward

Bul. San Diego Co. D. Soc. 29:14 May 1959

A complete portable dental air rotor unit now is available for use in hospitals and sanitariums, homes for the aged, isolated areas and so forth. The unit is contained in a kit 18 by 32 inches, in an aluminum suitcase. Over-all weight is 64 pounds. The kit contains cylinders of carbon dioxide for propelling the air rotor, and water under pressure for coolant and spray. Electrical power may be provided by direct or alternating current or by 6 volt or 12 volt batteries. The instrument has been used in normal office practice for two weeks without requiring a recharge of the cylinders.

The portable unit (patent pending) was invented, developed and tested by Peter E. Shea, Lemon Grove, Calif.

3427 Fourth Avenue, San Diego, Calif.

D.S.P.I. and dental service plans

Wesley J. Dunn and W. E. Jackson.
J. Canad. D. A. 25:61-68 Feb. 1959

The Royal College of Dental Surgeons of Ontario, with the approval of the Canadian Dental Association, has applied for a federal charter to incorporate an agency to administer dental service plans. Planning for various health services on a mass

basis is a vital concern in most civilized areas of the world. If the dental profession is to retain control of its own services, it must establish organizations capable of administering dental service programs. All plans related to payment for dental services should be administered, within each province, by one agency. Included among such group plans may be those with governmental authorities, unions, industrial organizations or other representative bodies.

On January 1, 1959, Canadian Dental Service Plans Incorporated assumed the responsibility of administering two plans designed to extend dental services in Ontario. These programs consist of a dental treatment service for certain welfare recipients, and a postpayment schedule.

In April 1958 the Ontario Minister of Public Welfare and officers of the Royal College of Dental Surgeons effected a contract in which the profession agrees to provide basic dental care to dependent children or dependent foster children under 16 years of age who qualify under the Mothers' and Dependent Children's Allowances Act of 1957. The basic dental care includes fillings, extractions, roentgenograms and prophylaxes. The Royal College will receive each month 70 cents for each child who is a beneficiary during the month. About 19,000 such children are presently eligible. Each dentist in Ontario has been supplied with chart forms on which he can record the pertinent information respecting an eligible patient for whom he wishes to undertake treatment. The dentist may proceed, without authority, to render the care which the agreement permits. A schedule of fees compiled by the Ontario Dental Association will be employed to establish the fees for the welfare plan. However, it will be necessary to prorate the accounts as the available funds will not permit payment to the full extent of the schedule. Payments to the dentist will be made once a month. The Royal College hopes that this service may be extended to others whose lack of employment or whose age or health make it almost impossible to provide for themselves the essential dental care required.

A postpayment plan also has been established, so that a patient may receive the dental treatment he requires when he needs it and pay for it on a time basis. Canadian Dental Service Plans Incorporated also will administer this program. Each

participating dentist is supplied with the agreement forms and explanatory literature. After the examination, presentation, and estimate of the cost, the financial arrangements are discussed with the patient. If the account is not being paid in cash, then the patient is further acquainted with the deferred payment plan; if this method is accepted, an agreement is signed. The agreement is forwarded to D.S.P.I. from whence all further servicing of the account emanates. The agreement between the dentist and the patient may be as flexible as both parties mutually agree for it to be. The terms of agreement rest completely with the dentist and his patient, and D.S.P.I. will follow any payment plan stipulated in the agreement.

The cost of participation in the plan is modest. To the dentist there is a lifetime membership fee of \$35 plus a 1 per cent service charge on all amounts remitted. To the patient there is a basic service charge of \$1 plus 30 cents per month in each subsequent month the account is carried if the account is less than \$150. If the account is \$150 or more, the monthly service charge is 50 cents.

230 St. George Street, Toronto, Ontario, Canada

Intra-office supervision and extra-office direction of auxiliary services

Allison G. James. *J.Am.Col.Den.* 26:112-115
June 1959

In the early 1900's, dentists were accustomed to carry out their own laboratory procedures. Those dentists who excelled rapidly increased their practices and found it expedient to train assistants in their offices to take over some of the mechanical details involved in restorative procedures. From this development there evolved a skilled craft and, eventually, the commercial dental laboratory that served more than one dentist.

The happy relationship between dentists and some commercial dental laboratories eventually degenerated because too many dentists failed to fulfill their professional responsibility, perhaps because of greed or economic pressures. One factor may be the tendency of many older and capable dental laboratory technicians to browbeat

young, inexperienced dental graduates in matters concerning dental laboratory procedure.

Some recent dental graduates enter practice with a bare, minimal understanding of laboratory procedure and no practical experience in it. The reduction of the dental curriculum by as much as one thousand hours from the 1926 level may account for this. It may be that only through post-graduate activities, such as study clubs and refresher courses, can this training be achieved. It must be achieved if the dental profession is to retain control and direction of dental laboratory technology. The dental schools should endeavor to convince students of the need to further their knowledge of dental laboratory technology after graduation.

Ideally, every dentist doing any appreciable amount of restorative dentistry requiring laboratory procedures should have a dental laboratory technician in his own office. Such an arrangement will be comfortable, convenient and economically sound only if the dentist has complete knowledge of the technics involved.

Increasingly, state dental practice acts are requiring written authorization to accompany each dental prosthesis sent to a commercial laboratory for processing. This is highly desirable. In some areas the work authorization is erroneously described as a prescription. A prescription implies complete directions for the completion of an order; except for some isolated, simple requirements, it is impossible and impractical to write a work authorization giving complete details. Some personal consultation between the dentist and the technician is necessary in the majority of instances.

No dentist is so busy that he has no time to write a work authorization, any more than a physician can be so busy that he has no time to write a needed prescription for the patient. If the dentist believes he has insufficient time, either this is a subterfuge to avoid an unpleasant task or the dentist is woefully disorganized. In either event, the dentist fails to fulfill his professional responsibility, and violates both ethical and legal requirements. Wherever dentists fulfill their professional obligations, there are no problems between the dental profession and the dental laboratory craft.

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Orthodontics

Growth and development of the mouth and pharynx region

Samuel G. Fletcher. *Logos* 2:71-83
Oct. 1959

Much of the research on maturation of facial and cranial structures has been done by orthodontists seeking factors predisposing to malocclusion, and by anthropologists. In 1931, an orthodontist, Broadbent, described a method of roentgenographic cephalometry based on procedures developed by Pacini (1922); the technic consists of comparing tracings of roentgenographic films using points and planes on the skull which have been previously established as least variable. In the present study, the patterns of growth and development of the structures of the speech mechanism are reviewed, and a method of roentgenographic analysis adapted for cephalometric measurement of structures of the facial skeleton related to speech is described. The method can be used to illustrate differences of the speech mechanism in two groups of children, one group having normal voices, the other having hypernasal voices without accompanying cleft of the palate.

Sutural growth accounts for most of the increment in the maxillary region of the human face and causes a downward and forward migration of the facial skeleton (Fig. 1). The posterior border of the hard palate and the pterygomaxillary fissure grow downward and forward only during the first year of life, after which they grow straight downward, retaining a stable anteroposterior relationship with sella turcica. The other structures of the maxillary region continue their downward and forward growth until the individual reaches 16 to 18 years of age.

Mandibular adjustment to the downward and forward growth of the facial skeleton occurs by rapid growth at the condyle, which has a me-

chanism and potential similar to that of the long bones of the body. The average vertical dimension of the nasopharynx doubles from infancy to adulthood, increasing most rapidly during the first 18 months of life. Anterior displacement of the maxillary and palatine bones in relation to the posterior pharyngeal wall provides a general increase in depth of the nasopharynx from 3 months to 17 years of age, although there is some fluctuation in the anteroposterior measurement during the first 11 years, related to growth of adenoidal tissue and of the upper face.

In the newborn infant, the tongue fills the entire oral cavity, being closer to adult size than any other part of the head except the brain. As the child matures, the space within the oral cavity is increased by descent of the tongue, mandible and hyoid bone, and by enlargement of the mouth through growth of the alveoli and eruption of the teeth. The soft palate increases in length consistently until a temporary plateau of increment is reached at about one and a half to two years of age. At age four or five years, the soft palate resumes a steady, slower increase in length, this increase continuing until the individual reaches early adulthood. The thickness, or vertical dimension, of the soft palate increases rapidly during the first year of life; thereafter, it increases slowly until it reaches a maximum thickness at 14 to 16 years of age.

Figure 1 The skull of a newborn infant, showing the primary growth sites of the facial skeleton. The dotted lines indicate the sites of sutural and condylar growth, and the arrows indicate the potential downward and forward direction of facial growth

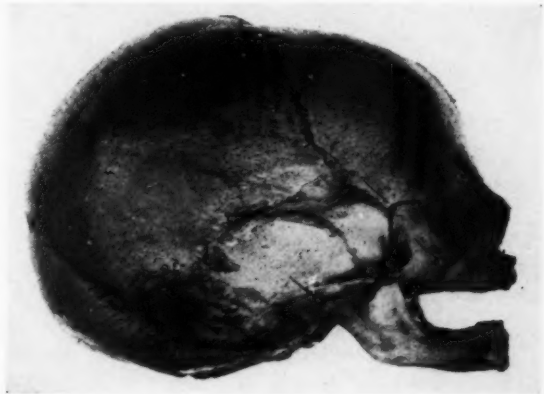




Figure 2 Roentgenographic landmarks: (1) nasion; (2) center of sella turcica; (3) basion; (4) anterior nasal spine; (5) posterior nasal spine; (6) cephalometric point A; (7) cephalometric point B; (8a) tongue dorsum; (8b) tongue root; (9) oral surface of hard palate; (10) soft palate; (11) adenoid, anterior to dotted line; (12) posterior wall of pharynx; (13) atlas, first cervical vertebra; (14) axis, second cervical vertebra

The principles of facial growth and development may be summarized as follows: There are identifiable and quantifiable growth patterns of facial and cranial structures; these patterns differ among structures and among individuals; in general, there is a rapid rate of growth during the first one or two years of life, followed by a slower growth increment to maturity.

In this study, a roentgenographic cephalometric method was developed, using angular rather than linear measurements, to evaluate speech structures in persons with speech disorders. Standard cephalometric points were used, as illustrated in Figure 2. Angles were devised which more adequately reveal speech relationships. The normal group consisted of 22 children with normal voices, the experimental group of 10 children with hypernasal voices without cleft palate. The following growth and developmental disturbances were indicated in the subjects with hypernasal voices:

1. Unusual caudal placement of the palate in relation to the posterior pharyngeal wall. Since the posterior wall is slanted, this placement would cause the distance between the soft palate and the posterior wall of the pharynx to be larger than normal; thus, additional palatal action would

be necessary to accomplish palatopharyngeal closure. In those persons having abnormally obtuse cranial angles, and thus an extreme slant of the posterior pharyngeal wall, the need for added palatal action would be increased and could be the primary etiology of the voice problem.

2. Unusual caudal placement of the palate in relation to the anterior portion of the base of the skull. Increase in this dimension was indicated both in individual subjects having hypernasal voices and in the hypernasal voice children as a group. If this trend were found in measurement of the lateral dimensions of the nasal cavity, it would suggest hypernasal voice could be attributed in part to increased size of the resonating chambers which would accentuate the palatopharyngeal incompetency.

3. Unusual anterior placement of the hard palate in relation to the posterior pharyngeal wall. Reduction in dimensions of the hard palate causes the distance from the palate to the posterior pharyngeal wall to be excessive. Thus, the soft palate cannot provide sufficient palatal contribution to palatopharyngeal closure.

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Hypnosis in orthodontics

Jacob Stolzenberg, *Am.J.Orthodont.*
45:508-511 July 1959

In orthodontics, hypnosis can be of value when problems arise, such as gagging when impressions or roentgenograms are being taken or when removable appliances are being worn, and in conquering oral habits in patients where no basic emotional problem exists. Hypnosis also may be used to overcome the use of chewing gum or sticky candies, and to elicit cooperation necessary for the correction of a malocclusion. Whenever possible, conscious suggestions are employed, but in stubborn situations hypnosis is used.

The branch of dentistry most amenable to the utilization of hypnosis is orthodontics. The factors that render orthodontic patients more cooperative are motivation and age. Whereas the dentist is concerned with preserving the economy and longevity of the dentition, the child patient

is more concerned with ego satisfaction in improving his looks and in competing with other children.

Before anything is done for the patient and before any instruments are employed for measuring, the patient should be enlightened as to what the practitioner is about to do. The explanation should be given in positive, simple words. Gentle and kind indoctrination will aid immeasurably in obtaining cooperation and successful orthodontic results.

If children say they try to stop circumoral habits but are unable to do so, hypnosis is induced and posthypnotic suggestions made that the patient stop tampering with appliances, or stop accepting chewing gum or sticky candies. To stop thumbsucking or finger-sucking, I establish the patient's willingness to overcome a sucking habit.

Once a motive has been established, a suggestion is made to wrap $\frac{1}{4}$ -inch adhesive tape lightly around the offending finger. The child then is asked about the significance of the red traffic light. He will say that it means "Stop." I then say: "Suppose you put a big red dot on the tape to remind you not to put your finger in your mouth." The response to this procedure is amazingly rapid. On the other hand, if the child persists in the habit (not on an emotional basis), then posthypnotic suggestions of negative olfactory responses can be employed.

The highest achievement in an orthodontist-patient relationship is attained when the parent says: "You know, Doctor, I would almost think that you had hypnotized my daughter when I see how nicely she cooperates."

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Pedodontics

On the time of eruption of the first deciduous tooth

Theodore James. *South African M.J.*
33:719-720 Aug. 29, 1959

A mother sometimes will show concern because her infant has not cut its first tooth "at the usual time," which is taken to be around the sixth month of life. Brennemann (1957) presented a table setting forth the normal range of time for the eruption of deciduous teeth; normally the first to erupt are the two lower central incisors, at from 5 to 10 months, and the last to erupt are the four posterior molars, at from 24 to 30 months.

Ferguson, Scott and Bakwin (1957), in their study of the growth and development of Negro infants, gave the mean age of eruption of the first tooth as 29 weeks for both sexes, and compared this with white infants, in whom the age is 29.1 weeks for boys and 31.6 weeks for girls.

At birth the process of calcification has begun in all the deciduous teeth, and within three weeks after birth there is roentgenographic evidence of

a deposition of mineral in the tips of the cusps of the first permanent molars. Precocious dental development without known cause has been recorded several times. These natal or prenatal teeth appear almost invariably to be one or both of the lower incisors. Probably a contributory cause for this early eruption is injury to the tissue overlying the deciduous tooth, of which the enamel of the incisory edge has formed completely. According to McDonald (1956), the incidence of natal teeth is 1 in 2,000 births; he proposes that a natal tooth should be regarded simply as a premature eruption and as an indication that an early eruptive pattern of the remaining teeth is to be expected.

Some attention should be paid to the possibility that the tooth present at birth is supernumerary. Only a roentgenographic examination will make it possible to diagnose a supernumerary tooth; such an examination will show the deciduous tooth in its developmental crypt.

There is no evidence that a pronounced delay in the eruption of the first tooth is followed by any special abnormality of the eruptive pattern or by

any special teething difficulty. Mouriquand (1950) has reported on the accelerated or explosive eruption of deciduous teeth attributable to hypervitaminosis D. A delay in the eruption of the deciduous teeth beyond one year of age might be related to a systemic condition such as mongolism, cleidocranial dysostosis, cretinism, rickets and congenital syphilis.

The time of eruption of the first deciduous tooth, no matter how early or how late, has no clinical significance if appropriate attention has been paid to exclude associated congenital anomalies or systemic pathology. If eruption is unduly delayed, probably only if there is no familial or hereditary trait, is it advisable to resort to roentgenographic examination to confirm or allay parental concern.

Pinelands, Cape Town, Union of South Africa

Hyperdontia in the deciduous dentition

B. Magnusson. *Svensk tandläk.Tskr.*
52:357-372 Aug. 1959

A review of the literature on hyperdontia in the deciduous dentition indicates that this anomaly is rare. Usually, such supernumerary teeth are normal in shape, but abnormally shaped supernumerary teeth have been observed. The anomaly appears most often in incisors, particularly in upper lateral incisors. Supernumerary deciduous cuspids seldom have been reported, and supernumerary deciduous molars appear to be nonexistent. In some instances, supernumerary deciduous teeth may be followed by a similar anomaly in the permanent dentition.

Supernumerary teeth may arise from the splitting of an ordinary tooth germ or from excessive proliferation of the dental lamina or its epithelial cords. The etiology is uncertain; heredity, and infectious and mechanical injuries, have been suggested as responsible factors. The theory of atavism is held to be unsatisfactory. Furthermore, supernumerary teeth often are found in association with cleidocranial dysostosis and cleft palate.

The author has seen five patients with supernumerary deciduous teeth: (1) a four year old boy with supernumerary upper left cuspid; (2) a five year old girl with two supernumerary upper central incisors; (3) a six year old boy with super-

numerary upper left lateral incisor; (4) a six year old girl with supernumerary upper left lateral incisor, and (5) a six year old boy with supernumerary lower right central incisor. The case reports are illustrated with photographs and roentgenograms. The bibliography contains 66 references.

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Thumb-sucking

Brit.M.J. No. 5139:25 July 4, 1959

Q.—A 5½ year old girl sucks her thumb so persistently that her lower permanent incisors are displaced. Is a permanent deformity likely to result? What is the psychological significance of the habit?

A.—At 5½ years the lower permanent incisors are just erupting. Despite noticeable displacement there may be no permanent deformity. Orthodontists do not view the habit of thumb-sucking in such a serious light as they have in the past. They believe that it is rarely the primary cause of a permanent deformity. The important point is that if thumbsucking is superimposed as a temporary feature on a dentition which is developing normally, the tongue will reposition the teeth when the habit ceases. If the habit is continued for several years and the deformity is pronounced, it will not be corrected naturally if the lower lip adopts a position between the upper and lower incisors. Most children will give up the habit by 8 or 10 years of age, with a little help and persuasion. A simple dental plate may be of value; by insulating the palate it removes the pleasure of sucking. No drastic steps need be taken and a nagging parent makes matters worse.

A sucking habit may be superimposed on a dentition which is developing abnormally owing primarily to inherited jaw form or to adverse lip and tongue forces. The sucking habit may exaggerate the deformity and only minor natural improvement occurs when the habit ceases.

Persistent thumbsucking in a child of school age, to the extent of being held responsible for displacement of teeth, is an indication of a need to cling to a form of satisfaction which is normal at an earlier stage of development but which

should no longer be appropriate. It is indicative of anxiety. It is not only useless to try to stop the symptom forcibly, but may be positively harmful to future emotional development if the significance of the sucking habit is not assessed before treatment is planned. Every effort should be made to assess fundamental problems before treating persistent thumbsucking as a habit of little or no emotional significance.

Tavistock Square, London W.C.1, England

Pedodontic center of Roberto del Río Children's Clinical Hospital

Juan Jiménez Obregón. *Rev.den.Chile*
48:129-132 May-June 1958

The pedodontic center of the Roberto del Río Children's Clinical Hospital in Santiago, Chile, consists of a hospital and a polyclinic with surgical divisions, wards for tuberculous patients, rooms for performing orthodontic work, and x-ray rooms. In the polyclinic is a comfortable waiting room with an area for registering patients. The room for examination of the patients and preparation of roentgenograms is equipped for emergency surgery. There are two surgical clinics for routine dental work and one for orthodontics and maxillofacial surgery.

All patients, either hospitalized or ambulant, have integral dental care. The parents of the patients are instructed, after the children are discharged, to bring them regularly to the center until completion of the dental work.

The equipment of the various clinics is modern and of good quality. There is a Carbotherm apparatus which produces transient anesthesia during cavity preparation. The recovery room is comfortable. Hospital rooms are in a quiet zone far from the clinics. The personnel, consisting of the head of the department, an orthodontist, five general dental practitioners and three nurses, treat about 12,000 children a year. The polyclinic is open daily for eight hours. If more personnel were available, the polyclinic could be open for 12 hours daily and it would be possible to treat more children.

Santiago has a population of 2,000,000 persons, with more than 700,000 children in need of dental treatment. The pedodontic center provides organized postgraduate courses in dentistry, in association with the Faculty of Dentistry of the University of Chile and the Odontologic Society of Chile. At the present time 11 dentists recently graduated from the dental school are taking special courses in pedodontics at the center.

Roberto del Río Children's Clinical Hospital, Santiago, Chile


 Periodontics

A new concept of the 'epithelial attachment' and the gingival crevice in health and disease

Jens Waerhaug. *Austral.D.J.* 4:164-173
June 1959

The present concept of the gingival pocket is based on the theory of the "epithelial attachment" announced in 1921 by Gottlieb. According to Gottlieb, the epithelial attachment should be fastened firmly to the tooth; according to Orban, this attachment should be of the strength of a muscle attachment. Under ideal conditions, the epithelial attachment should stretch from the gingival margin to the cementoenamel junction and there should be no gingival crevice at all.

Yet, the evidence that the epithelial cells are attached to the tooth like a muscle attachment is exclusively histologic. The author has never seen a person or an animal that did not have crevices of at least 1 mm. The results of some experiments are reported which shed new light on the so-called epithelial attachment and the gingival crevice.

One section showed what happens when a steel blade 0.05 mm. thick is inserted into the existing gingival crevice of the tooth of a young dog two hours after death. The steel blade was inserted all around the tooth. Then the gingiva was pressed against the tooth and the jaws were fixed in Formalin. The histologic section demonstrated a comparatively normal "epithelial attachment." The higher magnification showed that the steel blade caused some disturbance in the pattern of the epithelial cells. The intercellular bridges no longer are present. However, there was no break in the continuity of the epithelium, the superficial cells apparently being "firmly attached" to the enamel cuticle.

After removal of the steel blade, the soft epithelium was pressed in contact with the enamel

surface. When the jaws were transferred to the Formalin solution, the soft epithelial cells and the slight amounts of tissue fluid between them were fixed. Fixation means coagulation of the proteins in the cells and between the cells. For that reason the cells are glued together or to the tooth surface, giving the impression of a firm attachment which in reality does not exist.

In a higher magnification, hardly any change in the pattern of the epithelial cells can be observed, although they have been elevated from the enamel.

In a second experiment, a histologic section again gave the impression of portraying an "epithelial attachment."

Figure 1, above left, is a section from a dog's gingival crevice into which a steel blade was inserted 15 minutes before death. The steel blade has penetrated to the cementoenamel junction. Figure 1, above right, is a higher magnification of the middle third of the epithelial cuff shown in Figure 1, above left. Somewhat degenerated epithelial cells, between which are numerous leukocytes, adhere to the primary cuticle. There is no open space between the cuticle and the epithelial cells in spite of the fact that these had been separated 15 minutes before death. Figure 1, right, is a higher magnification of the area close to the cementoenamel junction shown in Figure 1, above left. The space between the basal layer of epithelial cuff and cuticle is filled with some degenerated epithelial cells, leukocytes and tissue fluid. The tissue fluid, coagulated by Formalin, gives the impression of being "attached" to the cuticle.

The mode of attachment of the epithelial cells to the tooth surface can be studied favorably around acrylic pontics which have been in contact with the gingivae for some time (Fig. 2). In higher magnification it may be seen that the epithelium adjacent to the pontic looks very much like an "epithelial attachment."

The connection between the cells of the "epithelial attachment" and the enamel depends most likely on pure adhesion and the strength of this adhesion most probably is similar to that which can be demonstrated when the thumb is pressed against a coin. The "epithelial attachment" surrounds the tooth like a cuff. It is not firmly attached to the tooth, but is kept in close approxi-

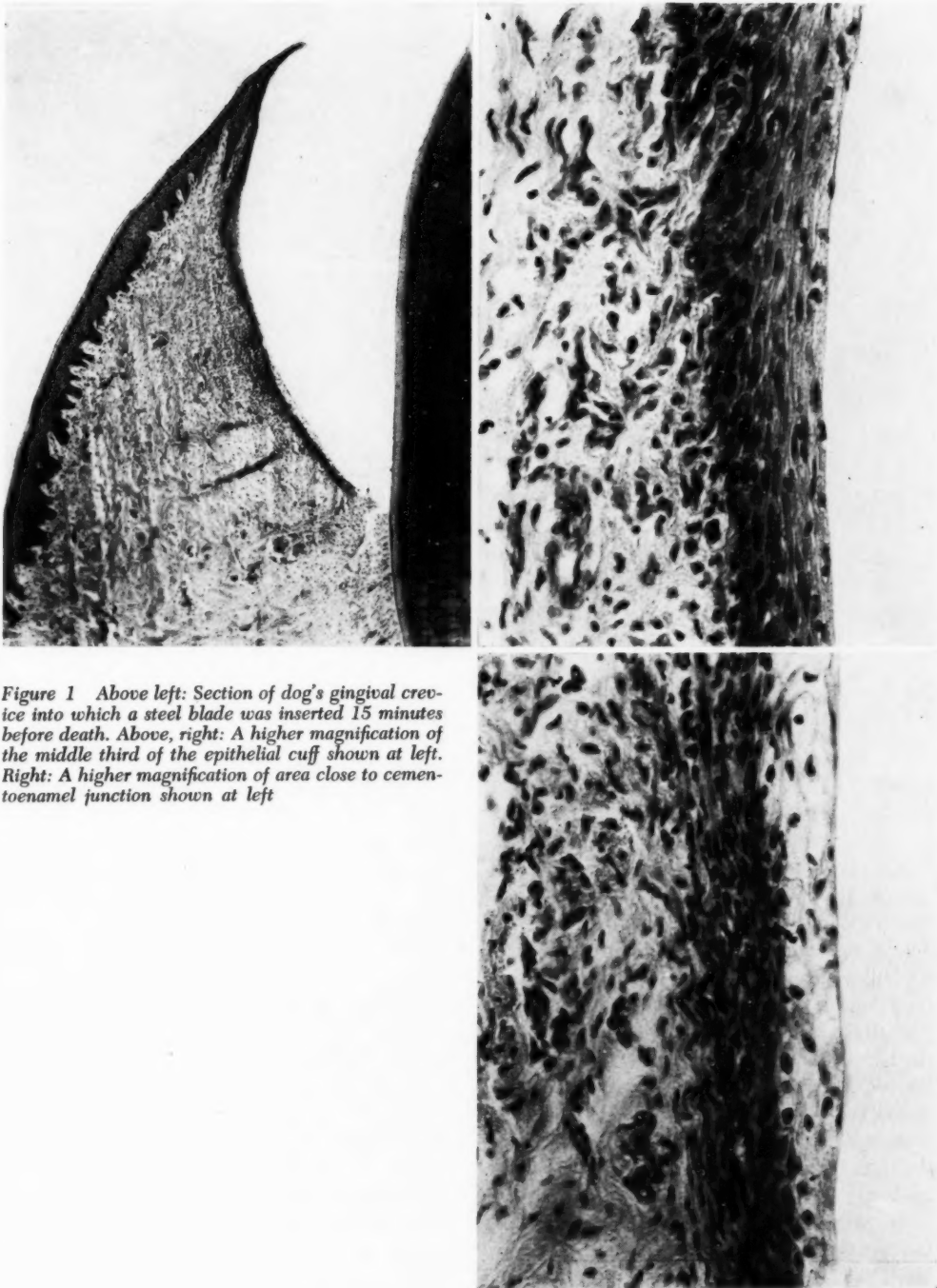


Figure 1 Above left: Section of dog's gingival crevice into which a steel blade was inserted 15 minutes before death. Above, right: A higher magnification of the middle third of the epithelial cuff shown at left. Right: A higher magnification of area close to cemento-enamel junction shown at left

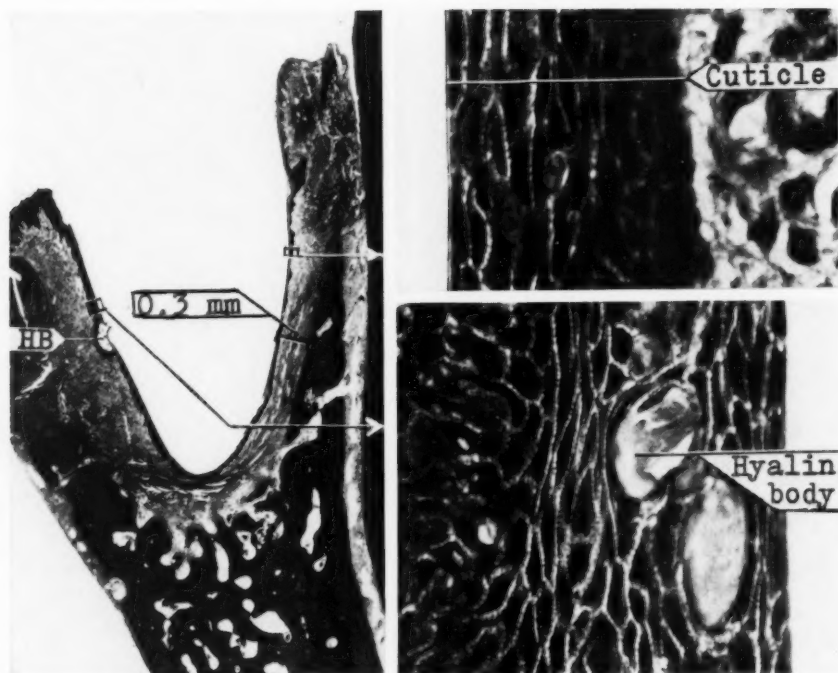


Figure 2 Left: The relation between epithelium and an acrylic pontic 11 months after insertion. Top right: Normal epithelial cuff adjusted to cuticle on surface of root tip. Bottom right: Formation of hyaline bodies within epithelial cuff. HB = accumulation of hyaline bodies

mation to the tooth by the collagenous fibers of the gingiva and by blood pressure. The normal gingival crevice is only a potential crevice. It opens up when instruments are inserted and it closes when the instruments are taken out. For didactic reasons, the author prefers to name the epithelial attachment the epithelial cuff. Under normal conditions this cuff encloses the tooth in a width of about 1.5 to 2.5 mm. that is the normal depth of the gingival crevice.

Further experiments demonstrate that the epithelial cuff is not a rigid system which is spoiled forever if once broken. On the contrary, the epithelial cuff has a wide potential for reactions. Instrumentation or insertion of food particles in the epithelial cuff most likely will be followed by healing.

According to the concept of the "epithelial attachment," any existing crevice should be pathologic, but this is not so. A normal crevice is one in which the epithelial cuff adheres to the tooth at the gingival margin without the existence of

a bacterial plaque between. Pathologic conditions develop when bacterial plaque grows between the epithelial cuff and the tooth. In most instances, the microorganisms are harmless. Once the plaque has become attached to the tooth, however, the anatomic conditions facilitate the formation of the periodontal pocket.

When the plaque has reached a certain distance from the cemento-enamel junction, the inflammation will break down the periodontal fibers below this point, and when the periodontal fibers are destroyed the epithelium will grow into the space and a "periodontal pocket" is formed. This means an apical displacement of the bottom of the original gingival crevice. As long as the plaque continues to grow, this pocket will deepen until the entire periodontal structure is destroyed. This in a nutshell is the pathogenesis of periodontal pocket formation due to bacterial irritation.

This concept explains why oral hygiene is the salient point in preventive measures. When supra-gingival plaque is removed twice a day, there will

be no subgingival plaque and hence no pathologic pocket. This concept also explains why removal of subgingival calculus leads to healing of a gingivitis.

Geitmyssregen 69, Oslo, Norway

Gingival healing following surgical curettage: a histopathologic study

J. Lewis Blass and Theodore Lite.

New York State D.J. 25:127-134 March 1959

A study was made of the healing process after subgingival curettage of the maxillary teeth in five patients between 30 and 40 years old. The patients selected for study displayed generalized gingivitis with marginal alveolar bone resorption and concomitant periodontal pockets ranging in depth from 3 to 7 mm. Clinical photographs, roentgenograms and biopsies were taken before treatment, and after treatment biopsies were made of two patients daily for ten consecutive days. The following findings were noted:

1. After complete surgical curettage, organization of granulation tissue starts at once.
2. Proliferation and regeneration of subepithelial connective tissue begins from 12 to 24 hours after complete curettage.
3. Apical proliferation of crevicular epithelium appears to be inhibited by granulation tissue formation.
4. Apical proliferation of the epithelial lining of the periodontal pocket does not occur until a base of reticular and collagenic fiber formation starts in about four to six days after surgical curettage.
5. When indicated, recurettage should be delayed eight to ten days after healing has taken place.
6. Microscopically visualized healing after curettage is nearly complete at the end of ten days in well-nourished healthy patients.
7. The tissues of the gingivae and periodontal pockets appear to heal faster after surgical curettage than after surgical procedures such as gingivectomy.

New York University College of Dentistry, New York, N.Y.

A follow-up study of the gingival aspects of periodontal disease and the local factors involved in its aetiology amongst a group of school children in India

M. K. Sanjana, F. S. Mehta, R. H. Doctor and B. C. Shroff. *J. All India D.A.*

31:55-62 April 1959

In 1956-57, the gingival conditions of about 600 school children in India were examined by the authors in an investigation of local factors responsible for periodontal disease (1958). Now after one year a follow-up survey has been carried out on 422 of the children available for re-examination. These were the findings:

1. In the course of one year there was an insignificant increase in the number of children affected.
2. There was a significant increase in the number of gingival areas affected.
3. The incidence of gingival disease depends significantly on age. For the 1957 age groups six to seven years and eight to nine years, there was a pronounced increase in the intensity of periodontal disease, but there was no change in the intensity of periodontal disease for the children between 10 and 18 years old.
4. The number of areas affected by periodontal disease depends significantly on age.
5. There was no change in the order of prominence—color, form, density, bleeding, swelling and ulceration—in the occurrence of clinical abnormalities.
6. There was a strong tendency for the change of color, form and density to persist for all ages and for all age groups, whereas for bleeding the tendency to persist was high for all age groups combined. On analysis of separate age groups, however, this tendency was extremely high only for those in the age groups 6 to 7 years, 8 to 9 years, and 12 to 13 years.
7. The order of prominence of the five etiologic factors is the same for 1957 and 1958, the order being debris, calculus, faulty eruption, tooth malposition and food wedging. The incidence of each factor increased after one year.

232 Navroji Road, Bombay, India

**Effects of cortical hormones
in treatment of periodontal disease**

Kazimierz Stawinski. *Czasop.stomat.* 11:313-319
May 1959

The gingival tissues of 126 patients (80 women and 46 men) with periodontal disease (periodontitis or gingivitis), receiving steroid drugs such as hydrocortisone (Roussel), Ultracortinal (Ciba) or Terra-Cortril (Pfizer), were studied at the Dental Clinic of the University of Poznan, Poland.

The data obtained were compared with those procured from patients with periodontal disease who did not receive these drugs.

The following conclusions could be made:

1. The cortical hormones produced satisfactory results in treatment of certain forms of periodontal disease, decreasing the inflammatory changes.

2. The topical application of the three drugs, in the form of a paste and applied every other day for two weeks, proved to be safe and did not cause any side effects.

3. In instances of gingivitis, the therapeutic action of the cortical hormones was intensified by the simultaneous use of antibiotic agents.

4. In 13 instances, resistance to the cortical hormones was observed.

5. In 20 patients, after a seemingly complete cure, recurrences appeared, although with symptoms far less severe than they were prior to the initial cortical hormone therapy.

6. The three cortical hormones appeared to be beneficial in the treatment of periodontitis and gingivitis, whereas in the treatment of other forms of periodontal disease neither of these drugs demonstrated any significant therapeutic effect.

If after a treatment period of two weeks no demonstrable improvement is obtained by the topical application of the cortical hormones, it appears advisable to discontinue the use of these drugs because further application will be of no therapeutic value.

Swieczickiego 4, Poznan, Poland

**Inflammation of the gingival tissue
after anti-epileptic treatment with
hydantoin derivatives**

Zahnärztl.Praxis 13:153 July 1, 1959

Q.—Which treatment method can be recommended in instances of inflammatory reaction of the gingivae to hydantoin derivatives, especially "Zentropil," used for control of epilepsy? The hydantoin derivative used has proved to be so successful that the physician is unwilling to abandon the drug on account of the presence of a comparatively simple gingivitis.

A.—Zentropil, as well as the other hydantoin derivatives (Dilantin, Hydantal, and Phenantoin) are known to produce inflammation of the gingivae by local deposits of hydantoin from the blood stream after their systemic administration for control of epilepsy. Consequently, hydantoin derivatives should be used with caution in patients whose history reveals previous sensitivity to drugs. In acute or chronic gingival inflammations associated with ulceration and necrosis, pain and hemorrhage, the administration of the hydantoin derivatives should be temporarily suspended until treatment of gingivitis has proved to be successful. The recommended treatment consists of di-calcium phosphate 0.5 Gm. (7½ grains) and ascorbic acid 100 mg. (1½ grains), three times daily. Injection of placenta extracts sometimes is helpful. In severe instances, however, gingivectomy should be performed. Of all the known hydantoin derivatives, Mesantoin (N-methyl-5, 5-phenyl ethylhydantoin) is an anti-epileptic and anticonvulsant agent comparatively free of side effects such as ataxia, tremor, fainting and inflammatory reaction of the gingival tissue or gingival hyperplasia. No experience with this drug, however, is at the disposal of the consultant or of his institute, the Dental Clinic and Polyclinic of the Humboldt University (Charité) in Berlin.

J. Münch. Invalidenstrasse 87/89, Berlin N. 4, Germany

Operative dentistry

Interdental contacts and marginal ridges

J. G. de Boer. *Tschr.tandheelk.* 66:444-452
June 1959

Although G. V. Black, the father of modern dentistry, did not mention the marginal ridges in his discussion of interdental contacts, several recent authors consider that these ridges play an important role in the prevention of food impaction.

Ackermann (1934), Gabel (1947), Lentulo (1934), Lubetzki (1939), O'Rourke (1951) and Parfitt (1948) are convinced that the proximal marginal ridges deflect food particles from the interdental contact areas toward the masticating surfaces (Fig. 1).

Lentulo has described how the masticatory forces, acting through the food bolus, tend to tighten the interdental contacts by influencing the anatomic form of the occlusal surfaces (Fig. 2). To stress their point of view, however, both Ackermann and Lentulo have permitted themselves considerable liberty in the interpretation of dental anatomy.

Parfitt and Herbert have called attention to the common error of identifying projected pictures with factual conditions (Fig. 3).

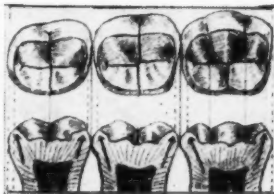


Figure 1 Interdental contacts. Papillae and contours (Ackermann)

Figure 2 Masticatory forces influencing the interdental contacts (Lentulo)

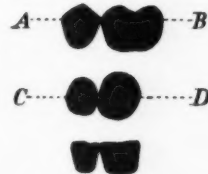
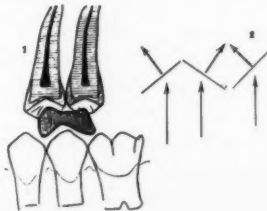


Figure 3 Mesiodistal sections of a lower second bicuspid and first molar show the marginal ridges in true form (below). A-B, and C-D show an erroneous identification of projected pictures with the factual condition (Parfitt and Herbert)

The importance of the interdental contacts is not limited to the continuous dental arches in man; they are of at least equal importance in many animal species, if only in groups of teeth. This applies particularly to herbivorous and omnivorous animals having postcanine teeth with occlusal surfaces like man. In these animals many different anatomic tooth forms can be observed, and when the different degrees of attrition and the differences in tooth position are taken into consideration, it can be concluded that effective interdental contacts are possible under various tooth conditions and that the marginal ridges play only a minor part, if any. This is demonstrated by the anatomic form of the upper posterior teeth of the tapir (Fig. 4) and of the mouflon (Fig. 5). In the dentition of these animals, as well as in the human dentition, it is possible that by rotation, by lingual or buccal inclination of isolated teeth, the marginal ridges are brought outside the contact area but that effective contacts are present when these contacts are sufficiently firm.

The mechanism by which interdental contacts are established and maintained can be observed best in animals with hypsodont teeth. The lower and upper posterior teeth of the hare (Fig. 6 and 7) demonstrate the mechanism which can also be observed in animals with brachydont teeth. Interdental contacts are maintained by an apicocoronal convergence. Lack of space, however, causes the upper molars in modern man to diverge apicocoronally, resulting in insufficiently firm contacts. The presence of an exaggerated

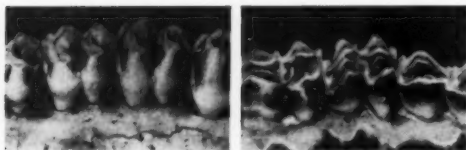


Figure 4 (Left) Upper posterior teeth of tapir

Figure 5 (Right) Upper posterior teeth of mouflon

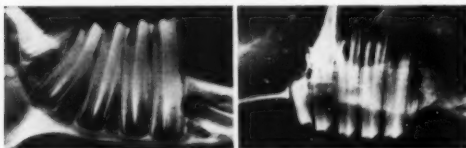


Figure 6 (Left) Lower posterior teeth of hare

Figure 7 (Right) Upper posterior teeth of hare

Spee's curve should always direct the dentist's attention to the condition of the interdental contacts because one cause for the lessening of contacts is proximal caries. A single proximal cavity may cause the lessening or even the loss of several interdental contacts. These contacts should be restored by filling the cavity temporarily with baseplate gutta-percha.

Unless preresorative separation has been attempted, full use should be made of the individual tooth mobility before an amalgam restoration is inserted. By the use of pear-shaped smooth condensers, the teeth may be separated by lateral condensation, thereby compensating for the thickness of the matrix band. This, of course, is impossible if the matrix has been reinforced with compound. When "drilling and filling" at the same appointment, the only extra fixation of the matrix should consist of a cervical wedge. Thin

matrix bands are preferable. The necessity of establishing firm interdental contacts in restorative dentistry cannot be overemphasized.

Polikliniek en Laboratorium voor Sosiodontie, Rijks-Universiteit, Groningen, The Netherlands

Operative dentistry

Österr.Zschr.Stomat. 56:85 March 1959

Q.—Any surgical intervention is called an operation; only a surgical procedure, therefore, should be called "operative." What are the reasons that dentists designate the dental branch which is devoted to preserving and conserving the teeth in a useful state, as "operative" dentistry?

A.—The terms "operate," "operation" and "operative" are derived from the Latin word *operatus*, meaning to work, labor, perform, execute, to exert influence or power, and to produce an effect. "Operator," therefore, designates not only a surgeon but anyone who operates a machine, an instrument or a thing, as in elevator operator, linotype operator, press operator, telegraph or telephone operator, and so forth. The designation "operative" dentistry for the branch of dentistry which is primarily devoted to the diseases and treatment of the hard tooth structures, the pulp and periapical tissues, is justified, even if "conservational" or "conservative" dentistry would be more descriptive terms. The purposes for which treatment is undertaken—that is obtaining and maintaining a useful, healthy and normal tooth condition—are of secondary importance in dental terminology.

Weihburggasse 10-12, Vienna 1, Austria

Prosthetic dentistry

**Studies in crown and bridge prosthesis:
homogenization of dental alloy castings.
A clinical study**

Björn Hedegård. *Trans.Roy.Schools Den.*
No. 1:3-21, 1958

A study was made of prostheses of homogeneous and inhomogeneous alloys in 53 patients, to obtain information on tendencies of the prostheses to discolor, subjective symptoms of the patients, and mucous membrane lesions. Generally, these three factors occurred more frequently with inhomogeneous than with homogeneous alloys.

If an inhomogeneous alloy is in contact with an electrolyte, the electrolytic pressure of its parts will vary with the respective precious metal contents of the parts, thus producing potential differences between them. These differences become equalized rapidly when the parts are in contact, as the parts of an inhomogeneous alloy naturally are. Galvanic phenomena accordingly must be expected in oral cavities in which there are prostheses of inhomogeneous alloys. The discoloration of inhomogeneous alloys probably is caused mainly by galvanic phenomena. This is confirmed by the fact that the degree of discoloration increases with the period of observation, which indicates that metallic ions are actively transported and deposited on already formed layers of discoloration.

In the material studied, discoloration was far more extensive and intense with prostheses made of inhomogeneous alloys than with those made of homogeneous alloys. Discoloration gives to a denture an unpleasant appearance which cannot be improved appreciably by scrupulous oral hygiene. Discoloration shows up on the visible surfaces of the alloy not only when these are bare but when they are covered by a plastic facing.

Although some subjective symptoms, such as temporary salt or metallic taste and increased salivation, may be observed whether the alloy

used is homogeneous or not, other more permanent troubles are more frequent when the alloy is inhomogeneous. Persistent subjective symptoms are not only more psychically trying to the patient but may be signs of some continuing irritation which in time may result in organic injuries. Distinct changes in the mucous membrane were noted in 3 of the 53 patients, all 3 having bridges of inhomogeneous alloys.

Inasmuch as homogenization is a simple and relatively cheap process, all dental prostheses of precious metal alloys ought to be homogenized before final insertion.

Royal School of Dentistry, Umeå, Sweden

Impression technique for patients that gag

Daniel W. Borkin. *J.Prost.Den.* 9:386-387
May-June 1959

A technic for obtaining an accurate impression in an edentulous patient who gags utilizes a low-fusing impression wax. A preliminary impression of the edentulous area is made, using an appropriate stock tray and red modeling compound. This impression can be removed from the mouth at will, warmed and resealed between paroxysms of gagging, until a fairly accurate impression is obtained. A cast of stone or plaster is poured in this impression, and this is used to fabricate a tray made of acrylic resin or shellac baseplate. The tray is tried in the mouth to ascertain that it does not impinge on any muscle attachments or other limiting structures.

The low-fusing wax is added to the tray. The wax is melted in a small metal dish over a Bunsen burner, and the melted wax is painted over the entire tray with a no. 4 camel's-hair brush, care being taken to add wax to the borders of the tray. When the tray is covered with warm wax it is carried quickly to the mouth and inserted, using as much force as necessary to seat the tray. As much muscle trimming is done as the patient can tolerate. This procedure is repeated as many times as is necessary until an acceptable impression has been made.

The wax will not set hard at mouth temperature but will remain soft and pliable until chilled by the dentist. The tray can be resealed

an unlimited number of times until the desired result is obtained, or the incompleting impression may be set aside until the next appointment. If warm water is flowed over the incompleting impression, the molding can be continued at subsequent visits of the patient, with no loss of accuracy.

When the impression is acceptable, the low-fusing wax must be hardened in the mouth; ice water from a bulb syringe is squirted along the borders of the completed impression and over as much of the impression surface as possible. The ice water will retard the paroxysms of gagging by its cooling effect. When the completed impression is removed from the mouth, the impression is washed gently under running cold water. The cast should be poured in stone immediately to prevent changes due to temperature. If it is not possible to pour the cast immediately, the impression may be stored in a bowl of cold water.

152 West Forty-second Street, New York 36, N.Y.

The porcelain veneer crown

George H. Moulton. *North-West Den.*
38:363-367 Sept. 1959

Although acrylic resins have a place in dentistry, porcelain remains the material with which the most esthetic restoration can be produced. The chief problem in the construction of full veneer porcelain crowns is that of reproducing the color of the natural tooth to harmonize with the adjacent teeth. A technic originated by Seizo Murata, of San Francisco, in effect predetermines the result and makes it easier for the general practitioner to construct porcelain veneer crowns.

The important first step is the selection of the shape and mold of the stock tooth. Color is reflected light. A change in the contour of an object produces a different color. The selection of the proper stock tooth should be made from the Bioform or vacuum-fired mold guides of artificial teeth or pontic facings. If the detail of the labial

portion of the crown should be changed, this can be done at this time with diamond stones and disks. Certain effects of hues, brown spots or white opaque areas can be produced by the use of stains on the lingual aspect of the shell prior to the first bake.

Preparation of the full porcelain veneer crown should be based on all the principles commonly used; the subgingival shoulder should be of a uniform width of about 0.5 mm. After the impression is taken and the die constructed, the die is transferred to the working model.

Preparation of the stock tooth or facing is begun by grinding the lingual aspect and adapting it to its proper alignment on the working model. A large, heatless stone is recommended for use in cutting away the retention pins and the large bulk of porcelain from the central portion of the lingual surface. The last step of hollow grinding to obtain final adaptation and alignment is done with diamond stones.

The porcelain shell is held so that the incisal length is in harmony with the adjacent teeth, and the gingival portion of the shell is trimmed off about 0.5 to 0.75 mm. short of the shoulder and at right angles to the long axis of the tooth. A 1/1,000 platinum matrix then is adapted by the usual procedure to the die.

The facing is placed back in alignment, and sticky wax is flowed into the ditch created between the gingival end of the shell and the shoulder of the preparation.

Tables to aid in the selection of the blended porcelain and of the firing schedule are presented, and directions given for the first, second and third bakings. The technic permits the construction of a porcelain jacket which will harmonize with the adjacent teeth both in contour and color. The technical difficulties of shading are minimized. The porcelain restoration can be characterized by applying stains to the lingual surface of the shell.

The author has used the technic successfully for ten years and is teaching it to dental students.

Emory University School of Dentistry, Atlanta, Ga.

Case reports

Progeria—case report

Manuel M. Album. *J.Den. Children*
26:106-114 July 1959

Progeria is a rare disease of childhood for which no satisfactory etiology has been presented. Patients with progeria show a reduction of statural growth, senile changes influencing the cardiovascular system, and retained infantile features. These children are dwarfed in stature, almost completely bald, display a beaked nose, receded chin, narrow chest, prominent veins, and atrophic changes involving the skin and subcutaneous tissues.

Such a patient, a 10½ year old boy, was admitted to the Children's Hospital of Philadelphia for correction of his dental condition. He displayed features of old age. He weighed 44 pounds and was 31 inches tall.

His mouth was in poor condition and the deciduous dentition had been overretained. The only permanent teeth which had erupted were the lower central incisors. The short ramus of the mandible, the obtuse angle of the ramus (155 degrees) and the receded chin produced a severe Class II malocclusion, which accounted for the inability of the patient to open his mouth very wide.

The permanent lower central incisors had erupted lingually. The deciduous teeth were firmly attached to the gingival tissues and showed no evidence of mobility.

Dental roentgenograms revealed a full complement of permanent teeth beneath the deciduous teeth. The roots of the lower first molars and upper incisors were almost fully formed.

Under general anesthesia, the lower right deciduous second molar and the upper right and left deciduous first molars were prepared for filling. The pulps in these teeth had receded considerably, and the dentin did not have the ap-

pearance and vitality seen in the dentin of young teeth. The pulpal floor was deep. The extracted teeth were studied microscopically, and a tremendous amount of secondary dentin was present, together with pronounced recession of the pulp similar to that seen in the teeth of old people or that resulting from attrition and trauma.

One year postoperatively the permanent teeth still had not erupted, and regions where extractions had been done still were not completely healed. Impressions were taken for partial dentures, and both upper and lower partial dentures were inserted to aid the patient in masticating food.

Medical Arts Building, Jenkintown, Pa.

Melkersson's syndrome (persistent swelling of the face, recurrent facial paralysis and lingua plicata): report of case

Sidney N. Klaus and Louis A. Brunsting.
Proc. Mayo Clin. 34:365-370 July 22, 1959

A case is reported of Melkersson's syndrome, illustrating the usual triad of symptoms—recurrent facial paralysis, facial edema and lingua plicata (fissured or scrotal tongue). Although this odd complex of symptoms has been mentioned infrequently in the American literature, there has been a growing list of case reports from Europe. Atypical cases have been described with only two of the afore-mentioned symptoms. Usually the facial paralysis is recurrent, the first episode developing most commonly before the twentieth year of age. It may be partial or complete. Occasionally, sensory defects in taste along the anterior two thirds of the tongue are noted. Clinically, the paralysis is indistinguishable from Bell's palsy.

The peculiar brawny edema of Melkersson's syndrome also is a recurrent process. The swelling usually affects the lips—upper, lower or both. The syndrome is found with equal frequency in men and women.

The forms of therapy employed in the Melkersson syndrome have been varied and notably unsuccessful.

Theories advanced to explain the origin of the syndrome have implicated bacterial infection of the teeth and throat, allergic reaction, syphilis, lymphogranuloma inguinale, basal arachnitis, and

benign lymphogranulomatosis. The etiology remains obscure. Recently, however, additional neurologic dysfunctions have been reported in patients who exhibit Melkersson's syndrome. Possibly the syndrome is caused by an underlying defect in the autonomic nervous system.

Mayo Clinic, Rochester, Minn.

Craniofacial dysostosis: report of case

F. Vichi. *Riv.ital.Stomat.* 14:637-694
March 1959

Craniofacial dysostosis (Crouzon's disease or ocular hypertelorism), a rare and hereditary disease, was described by Octave Crouzon, a French neurologist, in 1912. Since then several instances have been reported in medical and dental literature.

According to Crouzon, an inflammatory process in the fontanelles and sutures of the skull, present at the time of birth, produces the syndrome.

A 23 year old man with craniofacial dysostosis was recently observed at the clinic of the Dental Institute of the University of Florence, Italy. His face showed evidence of an underdevelopment of the upper jaw. His skull, owing to the delayed and incomplete ossification and closure of fontanelles and sutures, was subject to an extreme intercranial pressure, resulting in bilateral exophthalmos and excessive divergent strabismus.

The upper jaw was micrognathic, and the intermaxillary bone was underdeveloped, making the lower jaw appear prognathic.

Although in most instances the disease is hereditary and transmitted by either parent, in the case reported only two members of the patient's family (a sister and a maternal aunt) out of 50 relatives showed similar symptoms.

The patient's dentition appeared to be disturbed in both jaws. Some of his deciduous teeth were still retained and some of the permanent teeth failed to erupt. Some of the crowns were conical with enamel defects. The tooth roots were characteristically curved.

Roentgenographic examination revealed a deficiency of the clavicles, the thin bones of the skull and an imperfect closure of the cranial sutures, a retracted upper jaw, unusually small maxillary

sinuses and the presence of a large number of unerupted permanent teeth.

Severe headaches, struma, adenoids, hernia, dwarfism and spina bifida were the other complications present.

The gravity of this syndrome in the patient must be attributed to the presence of intrinsic factors which excited the phenotypic manifestations of the genic action.

Clinica Odontoiatrica della Universita, Florence, Italy

Histamine cephalgia

J.A.M.A. 169:1539 March 28, 1959

Q.—A 56 year old man who has had histaminic cephalgia for ten years has shown only fair response to a course of histaminic desensitization with an ergotamine and caffeine preparation, acetylsalicylic acid, ACTH and orally given steroids. What other treatments should be tried?

A.—Unger (1958) concluded that histaminic cephalgia is characterized by attacks of excruciating unilateral facial pain, inflammation of the eye, and rhinorrhea or blocking of the nose on that side. One of his patients was relieved by abstinence from pork, another by abstinence from milk and a third by removal of infected teeth. Migraine headache also was present in two of these three patients. Histaminic cephalgia and migraine headache probably are closely related. Although histamine injections usually give good results, this does not prove that elaboration of histamine at the site of the pain causes the symptoms, and the theory that injections of histamine lead to desensitization likewise is not proved. A search should be made for a focus of infection, especially for abscessed teeth, teeth with nonvital pulps or infected tonsils. Elimination diets, beginning with a diet from which milk, pork and chocolate are excluded, should be followed for about two weeks. If this gives no relief, new diets should be tried; for example, a diet which excludes wheat and other cereals and then one which excludes meat, fish, fruits and vegetables, in succession.

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Fractures

Five-year statistics of jaw fractures

Herbert Harnisch. *Zahnärztl. Praxis* 10:126
June 1, 1959

During the period from January 1, 1952, to December 31, 1957, 532 patients with fractures of the jaw, including fractures of the zygomatic arch, were treated at the oral surgical clinic of the Rudolf Virchow Hospital in Berlin.

A study of the accumulated case reports revealed the following statistical data:

1. Of these 532 jaw fractures, 90.96 per cent occurred in adults between 16 and 75 years old, and only 9.04 in children up to 16 years old. This is a low incidence in children when compared with the statistics of other countries.

2. Among jaw fractures, 82.9 per cent occurred in male patients and 17.1 per cent in female patients.

3. The incidence of jaw fractures was especially high among men between 20 and 40 years old (58.04 per cent).

4. The causes of jaw fractures, in order of prevalence, were fights and brawls (34.86 per cent); traffic accidents (33.9 per cent); falls (14.36 per cent); industrial accidents (9.96 per cent); sports accidents (4.02 per cent); epilepsy (1.34 per cent); gunshot wounds (0.38 per cent), and kicks by a horse (0.19 per cent). There was no instance in which a jaw fracture was caused by tooth extraction.

5. Fractures of the upper jaw occurred in 8.23

per cent of patients (5.94 per cent in male patients, and 2.29 in female patients).

6. Fractures of the upper jaw combined with subcondylar or zygomatic fractures occurred in 30.11 per cent of patients (23.55 per cent in male patients, and 6.56 in female patients).

7. Fractures of the lower jaw occurred in 5.19 per cent of patients (4.05 per cent in male patients, and 1.14 per cent in female patients).

8. Fractures of the zygomatic arch occurred in 21.64 per cent of patients 17.43 in male patients, and 4.21 per cent in female patients).

9. Of the 532 jaw fractures, 11.87 per cent occurred in unskilled laborers; 10.93 per cent in smiths and locksmiths; 9.38 per cent in pupils and students; 7.47 per cent in white collar workers; 8.42 per cent in workers in the building industry; 5.36 per cent in housewives; 6.51 per cent in retired persons; 5.74 per cent in businessmen; 3.25 per cent in motorists; 2.29 per cent in policemen; 1.72 per cent in physicians and dentists; 0.38 per cent in streetcar and railway conductors; 16.47 per cent in people with other occupations, and 10.53 per cent in people without occupation.

Most jaw fractures were treated by wire splint stabilization (Wassmund's method) obtaining success in 48 per cent. Recently, extraoral screws and acrylic splints (Becker's method) were used successfully in 60 instances of jaw fractures. Severe complications after the treatment of jaw fractures were avoided by using antibiotic therapy.

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Extractions

Dental extractions in patients with haemophilia and Christmas disease

H. McIntyre, F. Nour-Eldin, M. C. G. Israëls and John F. Wilkinson. *Lancet* No. 7104: 642-646 Oct. 24, 1959

In the past seven years the authors have extracted teeth from 49 patients with hemophilia and 9 patients with Christmas disease; 81 successful dental operations were performed, involving the extraction of from 1 to 25 teeth at one session. Of the 58 patients, 20 were under 15 years of age and 16 were between the ages of 15 and 25 years.

The management of these patients is relatively simple, and involves both local and general treatment. New patients with a history suggestive of a bleeding diathesis are investigated for hemophilia or Christmas disease. Full clinical and roentgenographic examinations of the teeth and jaws are carried out. If operative treatment is necessary, as much as possible of the preoperative preparation and treatment are carried out on an outpatient basis. Usually, the splint (See Figure 1), the most important preoperative measure, is prepared before admission. Alginate impressions are taken of the upper and lower jaws. On the stone models the splints are designed and made in clear acrylic resin. The patient is admitted to the hospital at least a day before extractions so that the adequacy of the splints may be checked. Antibiotics, orally administered are started a few hours before the extractions and continued while the splint is being worn.

Hemorrhage is controlled by the liberal use of fresh blood, given within four hours of being collected. The first transfusion consists of whole blood, preferably given in the morning just before the teeth are extracted. After the first transfusion, if the hemoglobin is 13.5 Gm. per 100 mg. (92 per cent) or more, plasma separated by centrifuga-

tion at 1,500 rpm for 30 minutes is given. Only one pint of fresh blood in 24 hours is given; when the hemoglobin falls sharply, the deficit is made up with either stored blood or packed red cells. The patient is taken in his bed from the ward to the dental department and the extractions are carried out in his bed, not in the dental chair. More fresh blood is given on the first and second postoperative days, and further transfusions are planned according to progress. Most patients require supplementary blood between the fourth and seventh day, and a few patients need blood transfusions up to ten days after the extractions.

Local anesthesia is the method of choice; the most used anesthetic is 2 per cent lidocaine hydrochloride with 1:80,000 epinephrine. When teeth have to be removed from more than one quadrant, the local anesthetic can be injected into all regions at the same time, with efficiency and safety.

The teeth are removed with the least possible trauma, the sockets are compressed digitally, and the acrylic splints are inserted. The mucosa is never sutured because of the risk of subsequent bleeding from the suture holes. In the earlier patients, thrombin solution was instilled into the sockets, but this did not appear to have any advantage.

To reduce venous pressure postoperatively, the patient is sent back to the ward with his head raised on pillows, and he is kept in bed until the bleeding has stopped. A jaw support or harness (Fig. 2) is applied to keep the splinted jaws in occlusion and so to maintain the splints in correct position. This is important, because if the splints are even slightly displaced, hemorrhage is likely to displace them still further, and swelling of the alveolar tissues may make it difficult to replace the splints. The jaw support serves to remind the patient to limit his talking and thus rest the mouth. During the postoperative period, patients receive a high protein fluid diet (2,500 calories).

Figure 1 Acrylic splint on stone model and in place in mouth

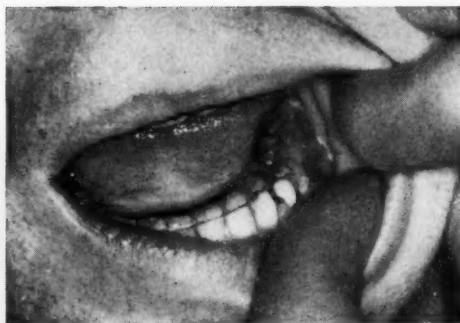
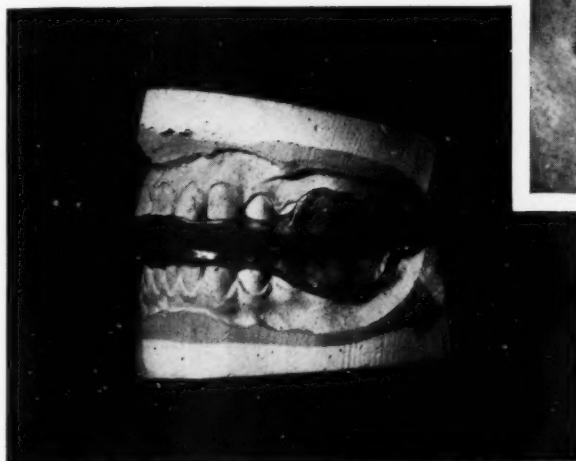


Figure 2 Jaw support in position after teeth extraction

The mouth is cleaned daily with a sodium bicarbonate solution, to lessen fetor oris. Usually, the splints are removed 24 hours after the oozing of blood from the sockets has ceased.

Up to 25 teeth have been removed at one operation by using this technic. Multiple extractions of deciduous teeth, but not of permanent teeth, tend to produce more prolonged bleeding than single extractions. This difference is most noticeable between the fourth and seventh postextraction day.

It was noted that hemorrhagic manifestations tended to become less severe and less frequent with advancing age.

Children present two special problems. The first is that sometimes it is necessary to remove sound teeth to correct malocclusion caused by overcrowding; such operations have been carried out successfully in eight patients. Intermittent,

troublesome dental hemorrhage during the shedding of deciduous teeth is the second problem peculiar in hemophilic children. Multiple hospital admissions can be forestalled by removing all remaining deciduous teeth in children who appear with toothache or hemorrhage at around their tenth year; such treatment has been carried out in six children without complications.

The technic described has several advantages. Bleeding usually is very slight; postoperative hemorrhage lasted for an average of 6.6 days in the whole series. The length of stay in the hospital is reduced. Local anesthesia in most patients simplifies the operative procedure and provides a better operative field. Cooperation between the dental surgeon and the physician is essential for the safety and efficiency of the treatment.

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Oral surgery

Significance of a centralized treatment of cleft lip and cleft palate

P. Fogh-Andersen. *Acta chir. & traum. Čechoslov.* 24:448-456 Dec. 1958

For more than 20 years the treatment of children with congenital facial clefts, especially cleft lip and cleft palate, has been centralized in Denmark at the hospital of the Danish Defectology Institute in Copenhagen, where surgical repair is performed free of charge.

This centralization of treatment made it possible to accumulate sufficient data on which a detailed study of the hereditary factors of cleft lip and cleft palate could be based. The case histories of about 25,000 members of 203 Danish families were reviewed.

The study of these case histories revealed that the predominant etiologic factor in facial clefts must be heredity, and that the external factors play only a secondary role.

Besides the accepted anatomic classification (cleft lip, cleft jaw, cleft palate and oblique or transversal facial clefts), two etiologic types were differentiated: (1) unilateral or bilateral cleft lip associated with other cleft defects, occurring mainly in boys, and (2) unilateral or bilateral cleft palate not associated with other cleft defects, occurring mainly in girls.

The following conclusions were reached:

1. Congenital insufficiency of the soft or hard palate, the predominant predisposing factor in cleft development, is essentially a physiologic deficiency rather than an anatomic defect.
2. Any cleft which prevents normal contact between the soft palate and the posterior pharyngeal wall must be repaired as early as possible because it impairs mastication and phonation.
3. The morphologic factors which contribute to the development of facial clefts are: (a) an ab-

normally short velum; (b) an anteroposterior deficiency of the soft or hard palate (or both); (c) the presence of submucous pits in the median line of the palatal process, and (d) the presence of a palatine aponeurosis.

4. Irregularities of the teeth, absence of the lateral incisors, presence of supernumerary teeth, difficulties in feeding and swallowing, speech defects and psychologic disturbances complicate the preoperative and sometimes the postoperative condition in congenital facial clefts.

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Speech defects after cleft palate surgery

Johannes Wulff. *Fortschr. Kief. Ges. Chir.* 4:182-189 1958

Case records of 484 patients who had undergone cleft palate operations at the Dental Clinic of the University Hospital of Hamburg/Eppendorf, Germany, during the period from 1948 to 1956, were examined in order to determine the incidence of postoperative speech defects.

Stammering was found in 25 patients (5.2 per cent) and hesitant speech in 14 patients (2.9 per cent). Four of the 35 patients (11.4 per cent) in whom secondary pharyngoplasty was necessitated because of failure of the primary cleft palate surgery, had developed speech defects.

These observations provide evidence that the incidence of postoperative speech defects is higher than generally realized and that an early surgical repair of cleft palate as well as preoperative and postoperative speech therapy and training play important roles in preventing postoperative speech defects.

In instances of absence or failure of normal speech function, the formation of an adequate pharyngopalatine sphincter by surgical closure of the cleft is a prerequisite for successful repair of the defect as well as for prevention of postoperative stammering.

The cleft palate operation, therefore, should not be postponed beyond the patient's fourth or fifth year of life to prevent mental retardation, psychic disturbance and severe dysarthria. As soon as possible, postoperative speech therapy should be initiated to develop and strengthen the oropharynx.

geal muscles, to assist speech development and—if indicated—to cure dysarthria.

In view of the fact that most cleft palate patients will require some type of postoperative psychotherapy, only properly trained speech therapists should be entrusted with this task.

If speech therapy is continued for a sufficient length of time the normalization of articulation and phonation and the cure of dysarthria will be achieved in the majority of cleft palate patients.

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Subcutaneous abscess or phlegmon?

Ada Per-Kuklinska and

Bronisława Stryla-Rossowa. *Czas.stomat.*

11:837-849 Dec. 1958

In many articles on maxillofacial inflammation, the authors do not differentiate between abscess and phlegmon.

Although the treatment of all subcutaneous and intramuscular infections is somewhat similar (adequate drainage after external or intraoral incision, followed by antibiotic therapy), the use of different surgical technics is required. Drainage of a phlegmon is more complicated than that of an abscess. Phlegmons require longer and deeper incisions, and postoperative roentgenotherapy.

It is, therefore, necessary to distinguish between abscess and phlegmon before treatment planning.

An abscess is the localized collection of pus caused by suppuration within a specific tissue, organ or confined space. It is produced by an invasion of pyogenic bacteria into a specific tissue. In its early stages, the abscess is a focal accumulation of well-preserved neutrophils in a region created either by the decomposition of pre-existing cellular elements or by the liquefactive necrosis of the original cells.

Because an abscess is characterized by the formation of pus and the localized destruction of parenchymal and stromal cells, its healing usually is accompanied by the production of scar tissue and a permanent destruction or deformity of the involved tissue.

The changing morphologic pattern of an abscess during development and healing is governed by biochemical reactions of enzymes.

Unlike the abscess, the phlegmon is poorly defined and tends to spread widely through tissue spaces and cleavage planes. Phlegmonous infections are characterized by the presence of invasive bacteria which produce large amounts of hyaluronidase and fibrinolysin.

Most of the phlegmons occurring in the maxillofacial region are caused by beta hemolytic streptococci which invade the lymphatic channels and give rise to either a diffuse, deep-seated, subcutaneous and suppurative inflammation (cellulitis) or a diffuse, subcutaneous and infectious bulous or vesicular swelling (erysipelas).

Despite these dissimilarities, several authors have suggested combining both types of inflammatory skin reactions in one entity, called "deep purulent inflammation of the perifacial tissues." Such a term, by designating only the specific tissues and sites involved but not the morphologic differences, may serve the purpose of obtaining uniformity in statistical data but would cause severe diagnostic errors.

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The use of the Webb bolt as a space maintaining appliance in defects of the mandible

John M. Hamilton and S. Baron Hardy.

Plast. & Reconstr. Surg. 22:296-301 Oct. 1958

The Webb or Compere bolt, commonly used in fractures of the tibial plateau, is a threaded bolt with nuts and washers. Designed to hold tibial fragments together, the bolt has been used by the authors to hold the mandibular fragments apart, in five patients with mandibular defects. In this use of the Webb bolt, the washers are placed outside the nuts.

The Webb bolt makes a simple, adjustable and readily available appliance. It erodes less than does a Kirschner wire or Steinmann pin. Its small diameter makes closure without tension easier than with bulkier appliances, and no teeth are necessary for fixation of the mandibular fragments. The Webb bolt may be useful in any defect in which it is inadvisable to use an immediate autogenous bone graft, such as resection for malignancy, in patients in whom the adequacy of soft tissue closure is doubtful, or in aged or debil-

itated patients. Some form of internal fixation usually is desirable in children and edentulous patients with mandibular defects.

The method was reported by Dingman and Alling in 1954 and was first used the same year by Albert Davne of the division of plastic surgery of Baylor University College of Medicine. The amount of lost bone is measured, and the nuts are turned to the desired length. The bolt is bent to the desired shape and inserted snugly into drill holes which have been made low in the mandible. Some adjustment of the nuts usually is possible, even after insertion. The soft tissues are closed carefully to give as much coverage as possible.

Five case reports illustrate use of the bolt.

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**The ineffectiveness
of carbazochrome salicylate (Adrenosem)
in the reduction of surgical bleeding**

Robert J. Gores. *Oral Surg., Oral Med.
& Oral Path.* 12:814-819 July 1959

Carbazochrome salicylate is a systemically administered agent which, several authors have asserted, is useful in reducing the loss of blood during surgical procedures, particularly in oral surgery.

To test this assertion, the loss of blood was measured in 53 patients who underwent multiple extractions and alveoplasty under general anesthesia. Of the 53 patients, 26 received intramuscular injections of 5 mg. of carbazochrome salicylate one and a half to two hours prior to operation. The remaining 27 patients served as a control group.

In the group of 26 patients treated with carbazochrome salicylate, the average loss of blood was 358 cc. In the control group, the average loss of blood was 353 cc. The operations were of equal extent and severity in both groups. No effective benefit in reduction of loss of blood at operation was noted in the patients treated with carbazochrome salicylate.

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Fibrolipoma of the oral cavity

M. Rosapepe and V. Faraone. *Ann. stomat., Rome* 7:881-886 Nov. 1958

Fibrolipoma, a benign tumor which is commonly observed in subcutaneous tissue, seldom occurs in the oral cavity. It is derived from fibrous connective tissue and an accumulation of lipid cells. The causative factors of this extremely fatty tumor are unknown. Several authors have suggested that fibrolipoma is a congenital and familial tumor, and that it may follow severe endocrine disturbances or degenerative alterations in other tumor types of fibromatous origin.

The fact that almost at the same time four patients with fibrolipoma of the oral cavity were observed and treated at the Dental Institute of the University of Rome, Italy, seems to be unique.

In these patients multiple fibrolipomas, benign, slowly growing and painless, occurred in the floor of the mouth, the pharynx and the inner cheek near the lower left molar region. The surface of the tumors was smooth, shiny and of yellowish color.

In all four patients the tumors interfered with speech and mastication. Teeth, tongue and larynx were free from pathologic symptoms.

The patients' history as well as their physical examination did not contribute any significant data; there was no clinical evidence of fibroma or lipoma in other parts of their bodies.

After roentgenographic examination, the tumors were radically excised. Only in one instance was the multiple extraction of two lower molars indicated. Postoperative treatment consisted of pressure dressings, ice bag packings, administration of 10 grains of acetylsalicylic acid, phenacetin and caffeine citrate (six times daily), rinsing with a lukewarm saline solution, and an almost liquid diet. After one week the sutures were removed; healing proceeded uneventfully and was completed in from two to three weeks without any significant scar formation.

Follow-up examinations for more than three years revealed no evidence of recurrence.

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Oncology

New classification of oral cysts from the viewpoint of dental roentgenography

Karl Ferenczy. *Deut. Mund Zahn Kieferhk.*
30:10-23 Feb. 1959

Most authors, especially those of textbooks on oral pathology, have classified the cysts occurring in or about the mouth either according to their anatomic sites or their specific pathologic phenomena. Such classifications, however, are hardly usable in general dental practice, because dentists should—and usually do—diagnose the type of cysts present only after studying and interpreting the roentgenograms.

Therefore, it appears necessary to classify oral cysts from the viewpoint of dental roentgenography. Such a classification, although using mainly the accepted terminology, will provide valuable clues for identification and differentiation of cysts in the roentgenograms.

Oral cysts should be differentiated as follows: Class I, dental cysts, and Class II, extradental cysts.

There are three divisions of dental cysts: (1) periodontal cysts; (2) follicular cysts, and (3) residual cysts.

There are two divisions of extradental cysts: (1) nasopalatine cysts, and (2) fissural cysts.

Periodontal cysts are further subdivided into seven types: radicular, apical, lateral, apicolateral, subperiosteal, traumatic and multilocular cysts.

Follicular cysts are further subdivided into four types: central, lateral, primordial and dentigerous follicular cysts.

Residual cysts are further subdivided into two types: radicular and follicular residual cysts.

Nasopalatine cysts are further subdivided into four types: incisive canal, central, unilateral and bilateral nasopalatine cysts.

Fissural cysts are further divided into three types: median alveolar, median palatal, and globomaxillary fissural cysts.

Cysts of the palatal papilla may be considered as belonging to the nasopalatine cysts.

Any oral cyst may undergo spontaneous or gradual neoplastic changes resulting in a variety of benign and malignant tumors.

Parasitic cysts, formed by larvae of incidental parasites and pseudocysts, formed as a result of hemorrhages, have not been considered in this classification.

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Osteogenic sarcoma of the jaws

Mauro Piemonte. *Radiol. med., Torino*
35:117-131 April-June 1958

Various tumor types may develop from connective tissue, according to its phase of evolution. The term "osteogenic sarcoma" includes all sarcomatous neoplasms derived from progenitors of cells which, after differentiation, are known as osteoblasts. Immature or ablastemic sarcomas derive from nondifferentiated mesenchymal tissue, mature or blastemic sarcomas from tissues in an intermediate stage of development, and the usually benign osteogenic sarcomas from adult and fully developed connective tissue.

Roentgenographically, most of the ablastemic sarcomas resemble metastases.

The following classification of osteogenic sarcomas of the jaws has been suggested by Geschickter and Copeland: (1) primary chondromyxosarcoma; (2) secondary chondrosarcoma; (3) osteogenic osteoblastic sarcoma; (4) chondroblastic sarcoma, and (5) osteolytic osteogenic sarcoma. These terms, however, are more or less microscopic terms and their use causes confusion in diagnosis and differential diagnosis without forming definite criteria for clinical separation of disease entities.

The true osteogenic sarcoma of the jaw seldom occurs; if it occurs it appears in young children and occasionally in old people. It is a solitary tumor, dissimilar to nonosteogenic tumors such as multiple myeloma or endothelial myeloma (Ewing's tumor) which metastasize more readily. Osteogenic sarcoma occurs in both jaws, usually

after trauma which, however, may occur after the onset of the neoplastic growth. Existing osteogenic sarcomas frequently are traumatized, especially those occurring in the oral cavity, a fact which often leads to a more rapid development and, therefore, to an earlier discovery.

Treatment consists of radical excision which usually necessitates resection of the jaw and roentgenotherapy. Postoperative radium irradiation, many authors feel, is of doubtful value.

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Dermatofibroma protuberans

O. Urteaga B. and A. Villanueva. *Arch. Peruanos pat.clin.* 12:207-218 July-Dec. 1958

Dermatofibroma protuberans is a benign, large-size molluscos neoplasm with a tendency to recur after surgical enucleation. This tumor, frequently occurring in the maxillofacial region of patients between 30 and 40 years old, has a high incidence of malignant change with localized invasions and metastases. Metastasis usually is associated with sudden and progressive loss of weight and general symptoms of toxemia and cachexia.

The histological picture of primary and recurrent tumors and of metastases resembles that of a fibrosarcoma.

Treatment consists of complete enucleation and removal of the surrounding tissues, and skin grafting. This type of tumor is extremely resistant to roentgenization. Roentgenotherapy is contraindicated because it may cause roentgen-ray dermatitis, and occasionally chronic necrotic ulcerations.

Four men, from 31 to 58 years old, with dermatofibroma were treated at the Hospital Dos de Mayo in Lima, Peru. The tumors had developed from small nodules to nodular neoplasms varying in diameter between 3 and 12 cm. After surgical removal, the tumors recurred within seven months in one patient; another patient had two recurrences before the tumor became malignant; the third patient also had two recurrences during a 15 year period but the tumor did not undergo

malignant changes; in the fourth patient, no recurrences were observed, and he did not report for further observation. Although in three patients abdominal and visceral metastases appeared, there were no pulmonary metastases.

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Palliative treatment of obstructive tumors of the oral cavity, the respiratory or gastrointestinal tract by intubation

E. Skielboe. *Ugesk.laeg.* 120:1222-1225 Nov. 11, 1958

Malignant tumors of the oral cavity, the respiratory and the gastrointestinal tract often cause difficulty in breathing and in swallowing even liquid food.

In instances in which the radical removal of the tumor is contraindicated and the masticatory difficulty cannot be alleviated by roentgenotherapy, intubation into the larynx through the glottis (Souttar's method) seems to be the most satisfactory palliative procedure available.

In patients in whom roentgenograms have revealed that the tumor is of an extremely soft consistency and is larger in size than the length of the Souttar's tube, Mousseau-Barbin's plastic tube can be used successfully. The introduction of this type of tube requires no special equipment.

Palliative intubation was carried out in 51 patients with obstructing malignant tumors which were too far advanced for surgical enucleation. Souttar's tubes were used in 41 of these patients and Mousseau-Barbin's plastic tubes were used in 10.

Even if the average time of survival in these patients was only four to five months, the palliative intervention by intubation appeared fully justified.

In inoperable malignant tumors, the use of Souttar's intubation method is recommended, and in suitable instances the method may be supplemented by the use of Mousseau-Barbin's plastic tubes.

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 Hospital
dental service

The dental care of handicapped children in the hospital

Richard Naismith. *J.Den.Children* 26:149-153
July 1959

An abnormally large proportion of handicapped children suffer from diseases and abnormalities of the mouth and teeth. Not all of these diseases are the direct result of the handicap, but all have an adverse effect on the child's general health, his speech, appearance and social acceptability. The problem of dental hygiene, in children with nervous and muscular diseases, is aggravated by their inability to maintain a regular diet.

As pediatricians and dentists know, success in the rehabilitation or maintenance of handicapped children is dependent on infinite patience and willingness on the part of the professional personnel to work with the existing factors.

The ideal arrangement for dental care of the handicapped child in the hospital is the fully equipped, permanent dental clinic. A bar suspended over the dental chair enables many handicapped patients to lift themselves from the wheel chair into the dental chair. A surgical type of aspirator is necessary, since these patients may have difficulty in swallowing. A broad canvas band with quick-acting buckles can be used to hold the spastic child in the dental chair. A plywood operating table (Album, 1957) laid over the dental chair may permit treatment with the patient in the supine position. An auxiliary headrest (Bramer, 1955) fastened to the arm of the dental chair, when the patient is held on the parent's or an assistant's lap, tends to give the head greater support. A shoulder and leg harness may control the patient and control involuntary movements. An adjustable plywood table and plywood seat to fit onto the dental chair can be made in the hospital's carpenter shop.

Finger protectors may be made from flexible metal, rubber garden hose, or a metal sewing thimble covered with a rubber finger cot. Wooden wedges for opening the mouths of spastic patients

may be made in the shop. Mouth props of several types and metal mouth mirrors are available.

Dental procedures rarely impose a strain on hospital routine, since for the most part the dental procedures are elective and can be set for a convenient time. The dentist should discuss the case with the staff physician in charge, the anesthetist, the operating room nurse and the head pediatric nurse.

Close cooperation among the various professions involved in the over-all care of handicapped children, and parent education, are necessary.

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Transfer of Milledgeville Hospital puts dental clinic in limelight

J.Georgia D.A. 33:5-6,11 July 1959

Administration of the Milledgeville State Hospital for the mentally ill has been transferred from the Department of Public Welfare to the Department of Public Health in Georgia. The hospital has 14,300 patients, of whom 2,300 are on furlough and do not receive dental service. The Tharpe Dental Clinic at the hospital is housed in an air-conditioned building, first occupied in 1951. The building has 12 operating rooms, two x-ray rooms, an oral surgery room, a dental laboratory, a classroom, and waiting rooms for white and Negro patients. The director of dental services, Robert C. Watson, heads a staff of nine dentists, three dental hygienists, eight dental assistants, two laboratory technicians, one laboratory assistant, one senior clerk and a typist.

The number of dental treatments and operations performed during the fiscal year ending July 1, 1958, totaled 35,724; in the first ten months of the current fiscal year, the number of treatments rose to 42,332.

Patients and attendants are educated and instructed in dental hygiene. Annual lectures by the staff of the dental clinic to attendants have helped the latter recognize dental problems and aid patients in caring for their teeth.

The hospital dental clinic has been approved by the American Dental Association Council on Dental Education for 12-month rotating internships.

Milledgeville State Hospital, Milledgeville, Ga.



Anesthesia
and analgesia

Endotracheal tube as a source of infection

Joanne R. Smith and William S. Howland.
J.A.M.A. 169:343-345 Jan. 24, 1959

As a part of a study of wound infection carried out at the Memorial Center for Cancer and Allied Diseases in New York, an attempt was made to determine if anesthetization equipment, especially the endotracheal tube, might be a factor in the development of infection.

Because the pilot study revealed only common airborne saprophytes from the anesthetization machine and its parts, the study was focused on the endotracheal tube. Samples from stock bottles of 5 per cent solutions of hexylcaine (Cyclaine) hydrochloride, used routinely for topical anesthesia, were cultured at random as the only source of contamination during anesthesia.

Of 41 pairs of endotracheal tubes, prepared with a soap containing from 0.6 to 0.8 per cent concentrations of hexachlorophene, only 18 (or less than 50 per cent) were sterile. Five of the remaining 23 tubes were contaminated with various nonpathogenic bacteria, and 16 tubes showed various degrees of contamination with staphylococci, streptococci or both. Only two of the tubes were positive for *Staphylococcus pyogenes* var. *aureus*.

Of the 20 endotracheal tubes prepared with a soap containing a 3 per cent concentration of hexachlorophene, 12 showed no bacterial growth, four were contaminated with *Staph. pyogenes* var. *albus* and an unidentifiable gram-negative bacillus, and four were contaminated during transit to the laboratory. The cultures from the bottles containing a 5 per cent solution of hexylcaine were uniformly sterile.

Adequate sterilization of endotracheal tubes can be obtained by scrubbing them with an antiseptic soap containing a 3 per cent concentration

of hexachlorophene. Scrubbing the tubes with an antiseptic soap containing from 0.6 to 0.8 per cent concentrations will produce sterility less than half the time. The 5 per cent solution of hexylcaine (Cyclaine) hydrochloride does not support the bacterial growth.

In this series, there was a 50 per cent incidence of *Staph. pyogenes* var. *aureus* in the nose, throat or oral cavity of patients. Postintubation cultures of the endotracheal tubes revealed a variety of bacteria, all of which, however, were present in the nose, throat and oral cavity of the patients before intubation.

Endotracheal intubation with adequately sterilized endotracheal tubes is not a source of staphylococcal infections. These tubes provide no new microorganisms when cleaned as described but they may permit migration of the oral flora into the trachea.

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Halothane as an adjuvant to nitrous oxide in outpatient dental anaesthesia

R. S. Walsh. *Brit. J. Anaesth.* 30:578-585
Dec. 1958

Three hundred unselected outpatients undergoing dental extractions at the Royal Dental Hospital under general anesthesia were divided into three equal groups. One group received nitrous oxide-oxygen; the second group, nitrous oxide-oxygen with trichloroethylene; the third group, nitrous oxide-oxygen with 1,1,1-trifluoro-2-bromo-2-chloroethane (halothane, or Fluothane). The results were assessed.

There was no significant difference as to alterations in pulse rate between the three anesthetics. Eighty per cent of those receiving nitrous oxide-oxygen alone, or supplemented with trichloroethylene, left the chair two minutes after the end of anesthesia. A similar proportion of those receiving the halothane supplement left in 2½ minutes. However, 80 per cent of the anesthetics with halothane were completed in three minutes, whereas a similar proportion of those receiving unsupplemented nitrous oxide-oxygen or nitrous oxide-oxygen plus trichloroethylene required four minutes. Halothane caused less salivation than trichloroethylene, and relaxed the jaw mus-

cles. Of the group receiving nitrous oxide-oxygen, three patients were drowsy for some minutes after operation. Of the group receiving the trichloroethylene supplement, five patients had pulse irregularities, two patients vomited and three patients were unduly drowsy. Of the group receiving the halothane supplement, one patient vomited and was drowsy, one patient regurgitated swallowed blood, one adult complained of nausea, and two patients were drowsy; one young woman who may have been epileptic developed clonic movements of the limbs, but her condition at no time caused anxiety.

Halothane is a useful additive to nitrous oxide-oxygen anesthesia in the dental chair. It appreciably reduces and in some instances abolishes the hypoxia which may accompany the use of nitrous oxide-oxygen in unmedicated outpatients.

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Hypnosis in dental practice

Siegfried Seidner. *Schweiz.Mschr.Zahnkh.*
69:631-634 July 1959

There appears to be an ever-increasing tendency in dental literature, especially in England and the United States, to propagandize hypnosis as applicable to many or all phases of dental practice.

Usually, the routine techniques for inducing a hypnotic trance at the dental office are outlined as follows:

1. A state of positive expectancy in the patient must be developed in the prehypnotic state, leading to immediate rapport and acceptance of suggestions and to profound sleep.
2. Prior to induction of hypnosis, the patient's willingness and ability to accept hypnosis should be ascertained.
3. The patient's attention and motor activity are kept to a minimum by having his eyes fixed on a glittering object.
4. Repeated suggestions are given in a monotonous voice to produce gradually complete relaxation, heaviness, sleep desire and insensibility.
5. The responsive patient is asked to follow all suggestive instructions.
6. Although the deepness of hypnotically induced sleep varies between slight trance and complete catalepsy, amnesia, comfort in the dental

chair and anesthesia must be ascertained before any dental procedure can be started.

7. Even though the hypnotized patient may appear to be asleep and the oral region adequately anesthetized, the same care must be exercised as in patients under drug anesthesia; especially, overheating of tooth structures during cavity preparation must be avoided.

8. Posthypnotic suggestions may be given to promote postoperative comfort or—if necessary—to obtain a more favorable response to future hypnosis.

9. All suggestions given by a conscientious dentist must be related only to dental problems.

10. The patient is informed of the signs and words which will be used to terminate the hypnotic state.

11. After the dental procedures are completed, the signal is given to produce normal wakefulness.

12. Only after the patient is fully awake and feels normal in every respect, can he be dismissed.

According to J. Stolzenberg (1950), hypnosis in dental practice can be used as follows:

1. In oral surgical interventions, for anesthesia, in cavity preparations and in treatment of periodontosis.
2. To control nausea reflexes caused by the taking of impressions or roentgenograms or by the wearing of new dentures.
3. To control unfavorable habits such as bruxism, biting of nails or tongue, thumbsucking, stuttering, smoking or chewing.
4. To control abnormal fears, especially phobia of the dentist or dental interventions.
5. To manage problem children.

Therapeutic use of hypnosis in medicine, especially in general surgery, is decreasing steadily. Only in the field of psychotherapy, hypnosis frequently is used to control epilepsy, hysteria or psychoneuroses.

Because hypnosis and its phenomena are related to the peculiar relationship between hypnotist and patient, which often may produce certain risks and emergencies outside the dental field, dentists are warned not to use hypnotic suggestion in their daily practice without adequate training providing a professional standard for the use of hypnosis and complete knowledge of the related phenomena.

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 Therapeutics
The ginseng root

E. Mann. *Zahnärztl. Welt & Reform* 60:172-173
March 25, 1959

In the lay press of several European countries, articles and advertisements recently have appeared in which the ginseng root, a remedy known to ancient Chinese medicine, was acclaimed as a "new wonder drug." *Su Wen*, the earliest authoritative medical book in China, contained the following statement: "Shing seng has no medicinal virtues other than those of a demulcent."

For the European pharmacologist, ginseng is not a new drug. Centuries ago, ginseng was produced from the roots of the wild-growing plant *Panax shinseng* and had been used to restore virile powers to impotent and senescent men.

Later, the roots of the American ginseng (*Panax quinquefolium*) were substituted for the more expensive Korean and Manchurian roots, and some European pharmaceutical houses imported these roots from the United States, Canada and Soviet Russia, in which countries *P. quinquefolium* is cultivated.

The taste of the prepared ginseng powders and tablets is mucilaginous, aromatic, sweetish and slightly bitter. A ginseng derivative, *Tinctura radialis Ginsengi*, has been used in England and Russia as a tonic, eupeptic and aphrodisiac.

At present, the therapeutic effects of the genuine Asian ginseng cannot be investigated clinically in European medical or dental schools, because the roots of this plant are expensive. Korean drug export firms demand from \$3,000 to \$4,000 for 1 kg.

Although it is certain that the manufacturers of the new "wonder" drug produce their remedies from the roots of the less expensive American species, their advertisements show the picture of *P. shinseng*. The market price for 1 kg. of *P.*

quinquefolium roots varies from \$60 to \$120; for the chemically unchanged "wonder" drug, however, prices ranging from \$300 to \$500 per ounce are demanded.

Articles, advertisements and prospectuses assert that daily doses of from 1.85 to 2.96 Gm. of the drug serve as a remedy for all dental diseases and for most morbid processes affecting the whole body or any of its parts.

H. D. Schlieb, B. Schulz, Sugilara and Min, and W. L. Liebknecht, independently have tested the effects of ginseng alone and in combination with other compounds. These authors came to the unanimous conclusion that ginseng, whether in its natural form or as a therapeutic product, is unacceptable for dental and medical use because of its demonstrated inability to justify the claims made by the manufacturers. The evidence presented by the advocates of this drug is inconclusive and not substantiated by the studies of qualified investigators.

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Prognosis for pemphigus vulgaris in a four-year old child

German M. Monthly 3:397 Dec. 1958

Q.—The duration of pemphigus vulgaris acutus, is about 13 weeks. The oral mucosa and parts of the face are predominantly involved. The lesions (bullae) are covered with a white crust, formed from exudate, and hemorrhage frequently. Medication with cortisone ointment, various lotions and calcium and sulfonamides has been utilized but without avail. What is the prognosis and which treatment method is likely to be most effective?

A.—Pemphigus vulgaris (acutus or chronicus) may occur at any age, including early childhood. In diagnosis and prognosis, however, it should be remembered that dermatitis herpetiformis (Dühring's disease) often is characterized by formation of bullae on the mucous membranes, thereby simulating pemphigus vulgaris. Should this be an instance of true pemphigus vulgaris, the prognosis is not favorable, although not as alarming as before the introduction of corticoid and adrenocorticotrophic hormone (ACTH) therapy. Even though the disease has often proved

resistant to corticoids, a further intensive treatment should be attempted, possibly by beginning with prednisolone injections at a daily dose of 3 mg. per kilogram of body weight. Hospital observation is recommended in order to exclude the presence of dermatitis herpetiformis. It is also advisable that treatment should be begun at the hospital.

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Anaphylaxis—a personal experience

Martin Putnoi. *Mil.Med.* 124:459-460 June 1959

The author's experience with anaphylaxis is limited to one case—his own.

Recently, I had several episodes of folliculitis of one or the other nostril; each responded well to oral penicillin and to bacitracin ointment applied topically. One afternoon another episode began. Bacitracin ointment was used right away, but the soreness was increasing. When I got to my quarters, I took four oral penicillin tablets—800,000 units. At 9:30 P.M. I took four more tablets. I decided to go to the hospital and take penicillin intramuscularly, thus eliminating the need to awaken for oral medication. At about 10:35 P.M. 600,000 units of procaine penicillin were administered. In past years, some 8 to 12 such injections had been received, none of which had caused an allergic reaction.

Returning to my quarters, I prepared for bed. At about 11 P.M. moderate tenesmus was experienced. This was followed rapidly by a violent pounding sensation at the top of my head and almost at once by a sensation of extremely heavy radial pulsations. Added to these symptoms was the sensation of a generalized erythema. Although these symptoms appeared successively, the total elapsed time probably was not more than 90 seconds. It was probably at this point that I realized what was taking place, and told my wife

to call the hospital officer of the day and tell him I was having anaphylaxis and please to hurry. I lay down on the bed, vomited suddenly and uncontrollably about three times. There is no recollection of dashing to the bathroom, which I am told I did, and which is where I was when the medical officer arrived. A quotation from his case report reads: "Patient was pulseless and unresponsive. Apex beat 50-60 per minute." I received 0.5 cc. of epinephrine subcutaneously, and response began in a few minutes. A second injection was given five minutes later. I regained consciousness and heard a sound which often had annoyed me in the past—the noisy, sighing exhalation of breath which always had seemed to me to be pseudodramatic and needless. Now I discovered to my consternation that the offender was I and simultaneously discovered two more things: the sound was not controllable and it no longer seemed as annoying as before. Briefly thereafter there was some strange dyspnea. In the first phase, although I could exhale well, inspiration was short and difficult; in less than two minutes, the situation was reversed. After a similar interval, normal respiration recurred. Recovery was rapid after this and the side effects of epinephrine gradually subsided.

It is a sobering thought to realize that anaphylaxis is possible with no prior history of sensitivity despite the fact that penicillin had been taken several times previously. Were it not for the fact that my quarters are two minutes distant from the hospital, and that I am a physician and could recognize the symptoms, this article, if written, would have a different author.

Many outpatients receive injections from which anaphylaxis is a possible result. It would not seem too cautious to have these patients remain in the outpatient department for a half hour after the administration of any medication which might produce an anaphylaxis.

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 Roentgenology
Endodontics: one-step reproduction of radiographs

John Philpot. *J.Ontario D.A.* 36:8:9-12
Aug. 1959

Often an endodontist may require a slide of a periapical or extraoral roentgenogram which, in itself, is either too dense or of too irregular size for projection by a standard apparatus. A simple technic is described whereby the dentist can make his own slides from such roentgenograms.

Many dentists use the circle-flash in conjunction with a 35 mm. camera; this apparatus can be adapted to produce quality reproductions of intraoral roentgenograms.

The material required includes: a sheet of opal glass with dimensions two inches larger than the largest x-ray film to be copied; one porcelain or plastic lampholder and one 100-watt bulb; one feed-through switch; a five-foot length of light cord; a small supply of lumber and hardware, and a series of x-ray mounts set in opaque masks the same size as the opal glass.

The apparatus should be assembled as shown in Figure 1. A series of test exposures is then made in the following manner:

1. The mask holding the roentgenogram to be copied is placed on the opal glass.

2. The 100-watt bulb is turned on and the room lights are dimmed (one 40-watt bulb at not less than ten feet from the apparatus).

3. The camera is adjusted, with use of the extension rings, to fill the picture area at a sharp focus.

4. The circle-flash is placed behind or beneath the opal glass at the correct distance (Fig. 2) on the same axis as the camera lens and roentgenogram.

5. The 100-watt bulb is turned off.

6. A series of progressive exposures—for example, f2, f2.8, f4, f5.6, f8 and f11—is made at 1/25th second, and a record is kept of each exposure. If the film is larger than 5 by 7 inches, it is advisable to set the camera shutter for a time exposure and to fire the flash twice manually by means of the test switch.

7. When the film has been processed, the dentist can ascertain which is the correct exposure, and use the data as a guide for future exposures.

Generally, roentgenograms fall into three or four categories ranging from light to very dark. A useful guide can be made by mounting some roentgenograms of varying density, for which the correct lens setting has been ascertained and recorded.

Use of this apparatus and technic will produce accurate reproductions of roentgenograms with consistency.

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Figure 1 (Left) Apparatus assembled

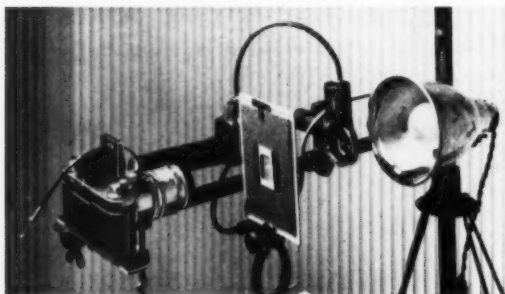
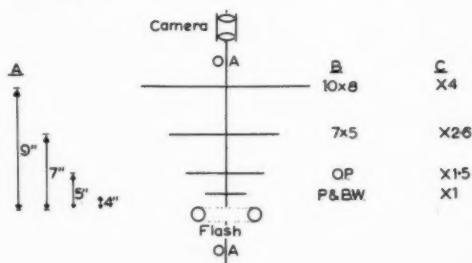


Figure 2 (Right) A = flash-to-film distances. B = x-ray film sizes. C = exposure factors. OA = optical axis. OP = Occlusal plane films. P and BW = periapical and bitewing films



Roentgenotherapy in inflammatory diseases of the oral cavity

G. Fuchs. *Medizinische* 58:429-436

Nov. 26, 1958

Since the introduction of roentgenotherapy for treatment of generalized inflammatory diseases (Fried and Heidenhain, 1926), extensive clinical experience has proved that weak irradiations, in doses ranging from one-fiftieth to one-hundredth of those used in treatment of malignant tumors, provide beneficial and curative effects on the inflamed tissues of the oral cavity.

This radiation dosage, however, is not strong enough to act as a bactericidal or even bacteriostatic agent.

The rationale for using roentgenotherapy in inflammatory diseases of the maxillofacial region is based on the following considerations: (1) the rapid increase in antibiotic-resistant microorganisms; (2) the failure of most chemotherapeutic agents to penetrate the deep cavities of facial, oral or dental abscesses; (3) the synergistic action of antibiotics and roentgenotherapy, and (4) the potency of roentgen rays used in nonbacterial conditions.

Facial furuncles and carbuncles respond readily to irradiation. The method of choice is roentgenotherapy using doses from 30 to 50 r within 24 hours after the initial appearance of inflammatory lesions. If these lesions are more advanced, weaker doses should be used over a longer period of time. The prognosis is favorable.

For abscesses of the salivary glands, higher doses are required to achieve satisfactory results and to prevent recurrences. The use of from 500 to 600 r (in from four to six treatments) is recommended.

Chronic inflammatory diseases of the facial skin or oral mucosa usually respond well to roentgenotherapy; from 50 to 100 r per sitting are required.

In chronic recurrent thrombophlebitis with oral manifestations, roentgenotherapy is not used as often as it should be. Dosage ranges from 25 to 50 r per irradiation field. The disease usually can be controlled within a few days and recurrence avoided.

The treatment of various arthritic and periartritic inflammations in the maxillofacial region

(especially of the temporomandibular joint) by roentgenotherapy alone does not obtain cure although it achieves beneficial results by alleviating pain. Doses ranging from 600 to 900 r may be administered through three portals; an alternative method involves doses ranging from 50 to 60 r repeated in six treatments.

In most instances of inflammatory diseases of the maxillofacial region, the value of roentgenotherapy may be increased by combining it with ultraviolet or short-wave irradiations.

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Cysts and cystic tumors of the jaws

Ernesto Piazzini. *Rass.trim.odont.*

39:869-886 Oct.-Dec. 1958

The epithelial linings of follicular cysts of the jaws sometimes undergo sudden malignant changes. Many authors have reported that squamous cell carcinomas developed from follicular cysts formed around unerupted teeth, mainly cuspids or third molars.

The roentgenographic demonstration of destruction of the walls of the maxillary sinus, usually associated with odontogenic cysts, however, does not always furnish sufficient evidence of the presence of a malignant tumor.

Six patients recently were referred to the Dental Clinic of the Institute for Dental Specialties of the University of Pavia, Italy, for surgical treatment of intrasinus tumors after roentgenographic examination had revealed severe destruction of the lateral bony wall of the antrum. In all six patients, the findings at operation pointed to the presence of a maxillary cyst. Histologic examination later verified this diagnosis.

A review of these six case reports leads to the following conclusions:

1. Carcinoma developing from the mucous membrane of the maxillary sinus is not always associated with roentgenographically demonstrable destruction of osseous tissue.

2. Large cysts of the jaws, especially of the upper jaw, sometimes are accompanied by bone destruction which in roentgenograms simulates carcinoma.

3. The mucous membrane of a cyst sometimes is exposed to malignant changes.

4. In instances in which a malignant degeneration of the cystic mucosa is suspected, histologic examination can establish the diagnosis with certainty.

5. It is important to understand the biologic principles involved in the development of cysts and cystic tumors of the jaws and to base surgical procedures on the histologic and not the roentgenographic findings.

6. Arteriovenous aneurysm sometimes produces erosion of the jaws simulating the presence of a follicular cyst.

Traumatic cysts of the jaws frequently imitate roentgenographically the symptoms of tumors, as was evidenced by the various preoperative diagnoses in the six selected patients.

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Accuracy of x-ray timers: a trial investigation

William J. Updegrave, Robert L. Mohr and Alfred J. Potts. *Oral Surg., Oral Med. & Oral Path.* 12:717-722 June 1959

In dental roentgenography, the radiation reaching the patient can be reduced greatly by reducing the exposure time. This is achieved by using film with a higher emulsion speed. The faster film, however, is not always satisfactory, since the resulting roentgenograms sometimes are inferior in quality and exhibit variance in their densities. The primary reasons for these defects are (1) fog and (2) inadequacy of x-ray timers.

Fifty-three timers on the dental x-ray units in the offices of dentists in the Philadelphia area were checked for accuracy; 45 (85 per cent) were inaccurate. Twenty-nine timers (55 per cent) were too fast, so that less radiation was being produced than the timer indicated. Sixteen timers (30 per cent) were too slow, so that more radiation was being produced than anticipated. Timers that were too fast resulted in underexposed film; timers that were too slow, in overexposed film.

If the timer is fast, it is probable that a longer exposure could be used than is recommended by the manufacturer. If the timer is slow, it may be necessary to use a lower speed film at the eight

inch target-film distance; or, if the high-speed film is used, the milliamperage can be lowered from 10 ma. (the usual operating level) to 5 ma. Since the density of the film is controlled primarily by milliamperage seconds (milliamperage \times seconds of exposure), the reduction in milliamperage compensates for the inaccuracy of the timer.

The timers on five newly manufactured 90 KVP (kilovolt peak) dental x-ray machines were examined and found to be highly accurate at all fractional second exposures.

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Differentiation of radicular cyst from apical granulating periodontitis

Arne Forsberg and Gunnar Hägglund.
Svensk tandläk. Tskr. 52:173-184 April 1959

Roentgen contrast material is used in a technic designed to distinguish radicular cyst of the tooth from apical granulating periodontitis. The contrast medium, Urografin 60 per cent, is injected via the cleaned root canal of the relevant tooth, after which an intraoral roentgen film is exposed.

In 23 instances in which the injection could be made, the technic made it possible to establish a correct diagnosis. The diagnosis in each instance was confirmed by subsequent histologic examination. The advantage of the method is that it can be used in apical foci so small that conventional puncture through soft tissues and bone would be difficult or impossible.

In 11 instances (5 instances of apical granulating periodontitis and 6 of cysts) where it was found impossible to inject the contrast material via the root canal of the tooth, the medium was introduced into the focus after puncture of superjacent tissues. In some of the cysts, it was difficult to inject the contrast material as the cystic cavity was filled with necrotic soft tissue; the cyst wall was punctured elsewhere with a coarse cannula. On injecting the radiopaque liquid through one cannula, the rise in pressure in the cystic cavity resulted in the evacuation of some of the necrotic soft tissue via the coarse cannula. This permitted the introduction of a sufficient amount of contrast medium to secure a diagnosis in most instances.

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 Public health
dentistry

**Decrease in work capacity
caused by tooth loss, jaw defects and
diseases of the temporomandibular joint**

K. F. Hoffmann. *Deut.Zahnärztebl.* 13:430-433
July 8, 1959

The following statistical data based on the decrease in the work capacity of the entire West German labor force after tooth loss, jaw defects and various diseases or disturbances of the temporomandibular joint, were recently accumulated and published: (1) complete tooth loss in both jaws caused a decrease in the total output per worker of from 20 to 25 per cent; (2) complete tooth loss in either the upper or the lower jaw, 15 per cent; (3) defects in the upper jaw exposing the nasal primordia, the maxillary sinuses or the ethmoid bone, and producing severe disturbances in function, from 20 to 40 per cent; (4) defects in the lower jaw also causing functional disturbances, from 10 to 30 per cent; (5) arthritis of the temporomandibular joint, from 20 to 50 per cent; (6) arthritis of the joint leading to lockjaw and a poor general condition, 70 per cent; (7) defects of the palate, 30 per cent, and (8) defects of the lips associated with increased salivation, 20 per cent.

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**Statements on proposed alternatives
to fluoridation of water supplies**

Pub.Health Rep. 74:517-520 June 1959

Various vehicles have been proposed for the systemic administration of fluoride in regions where water fluoridation cannot be applied. The most important of these vehicles seem to be milk, table salt and fluoride tablets. Milk might be a possible alternative vehicle in countries with a universal milk consumption by the children, and salt might

be possible for regions with a low or irregular milk consumption.

At present, the value of milk and salt for fluoride administration cannot be compared with that of drinking water, since the evidence in favor of the first two vehicles is incomplete; in particular, there is a total lack of clinical evidence of their effectiveness. Tablets have been shown to have some positive effect, although the experiments with tablets have been performed for a much shorter time and on a much smaller scale than the experiments on drinking water fluoridation.

Continued research on these fluoridation methods should be encouraged. If their effectiveness, practicability and safety of application can be demonstrated, they may become valuable in regions where water fluoridation is impossible.

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Dental caries and puberty

Brit.M.J. No. 5127:966 April 11, 1959

The time of eruption of the permanent teeth is related to the child's height and weight. Children showing signs of puberty tend to have earlier eruption of permanent teeth than children of the same age who are prepubertal. Mansbridge (1958) asserts that when children of the same chronological age and at an equal stage of dental development are compared, the more sexually mature show a higher prevalence of dental caries than the less mature.

The suggestion that sexual development and susceptibility to caries may be related calls for further investigation. Although Mansbridge believes he has proved his case for boys, he is not so sure about girls. The subject is of immediate interest because children today are maturing much more rapidly than did their parents and grandparents. The 11 year old boy today is as tall and as heavy as the 13 year old boy at the end of the nineteenth century, and adult stature is reached four or five years earlier than in that era. Also, there has been a notable reduction in the mean age of onset of puberty. In girls, for instance, the average age at which the menarche occurs has fallen from about 17 years in the nineteenth century to a little over 13 years at present.

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Relation between the fluoride content of drinking water and the urinary fluoride excretion

M. Jirásková and J. Ružička. *Českoslov.stomat.* 59:166-170 May 1959

In five Czechoslovakian communities with a fluorine concentration in the drinking water of from 0.3 to 5.4 ppm, the possible relations between the fluorine (fluoride ion) content of regularly consumed water, the individual urinary fluoride excretion and the incidence of mottled enamel were investigated.

In this serial study, the test method described by Th. von Fellenberg (1950), modified by H. B. Elkins (1951), was used exclusively.

For 24 hours, the urine of 10 year old school children selected at random—who had lived in one of these villages since birth—was collected and analyzed. The incidence of mottled enamel was recorded.

The results were as follows:

1. In Unčín, with drinking water containing 0.3 ppm fluorine, the individual urinary excretion contained from 0.21 to 0.48 ppm fluorine.

2. In Proboštopv, with drinking water containing 0.93 ppm fluorine, the individual urinary excretion contained from 0.78 to 1.53 ppm fluorine.

3. In Krupka (District I), with drinking water containing 1.8 ppm fluorine, the individual urinary excretion contained from 1.41 to 2.17 ppm fluorine.

4. In Krupka (District II), with drinking water containing 2.6 ppm fluorine, the individual urinary excretion contained from 1.25 to 2.39 ppm fluorine.

5. In Bohusudov, with drinking water containing 3.5 ppm fluorine, the individual urinary excretion contained from 2.00 to 3.10 ppm fluorine.

6. In Hrdlovka, with drinking water containing 5.4 ppm fluorine, the individual urinary excretion contained uniformly 5.2 ppm fluorine.

The comparatively moderate incidence of mottled enamel and the remarkably low incidence of caries in these children may depend on the following sources of fluorine intake: (1) the amount of fluorine which passed from the mother

to the fetus during pregnancy; (2) the amount of fluorine in the milk of the mother during lactation, and (3) the amount of fluorine obtained from foodstuffs and the drinking water. The occurrence of urinary fluorine excretion in amounts from 0.21 to 5.2 ppm in children in a satisfactory general health condition demonstrates that the urinary excretion of fluorine is a normal manifestation which can be observed in individuals and groups living in different geographic areas and consuming different diets. Until investigations have determined the fluorine contents of the various foods regularly consumed, no conclusion should be drawn in regard to the behavior and metabolism of fluorine in the human body.

This study has been carried out as one of many preparatory studies before fluoridation of water systems in the larger cities of Czechoslovakia is initiated.

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Evaluation of school dental health programs

J. M. Wisan* and David A. Soricelli.
J.School Health 28:320-323 Dec. 1958

Most dental authorities agree that the incidence and prevalence of dental diseases may be reduced by: (1) optimal fluoridation of public water supplies; (2) topical application of fluoride solutions; (3) provision of adequate amounts of the healthful foods; (4) reduction in eating of sweets; (5) brushing teeth directly after eating, and (6) incremental dental care, that is, adding to the dental care program each year those children who reach a specific age group.

School administrators should guide their dental programs with the following objectives in mind:

1. Health education programs should motivate parents to provide healthful foods and to reduce the eating of sweets.

2. The brushing of teeth directly after eating should be taught.

3. Incremental dental care should be provided for children.

In order to evaluate the achievement of a dental health educational program, it is essential to

have a precise statement of the program's objectives, and criteria to determine whether these objectives have been achieved. It is necessary to have baseline data to record the status of the situation at the time the program was instituted, and it is advisable to use a matched sample or group as a control. The results of a dental care program may be evaluated with statistical indices which measure achievements.

High standards of treatment may be assured by designation of professional standards by the local dental society, interpretation of these standards for the dentists employed, supervision of the treatment provided, and in-service programs of training.

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* deceased

Comparative studies of the caries incidence in the deciduous and permanent dentition in the same individuals

Paul Bruszt. *Schweiz. Mschr. Zahnk.*
68:705-713 Aug. 1958

Two series of investigations were carried out at the dental department of the Municipal Hospital of Baja, Hungary, to determine whether a relation exists between the incidence of caries in the deciduous dentition and that in the subsequent permanent dentition in the same individuals.

In the first series, 97 school children, all about 11 years old, were examined and the caries data recorded. Six years prior to the study, the same children had been examined and the presence of carious lesions in their deciduous teeth had been entered in dental charts.

By comparison of the caries data it appeared that a definite relation exists between the susceptibility and resistance to caries of the deciduous and permanent teeth in the same individuals.

Sixteen children showed teeth free of carious lesions. Of those, 12 children had had equally excellent deciduous teeth.

In the second series, 600 school children between seven and eight years old were examined and the carious lesions in their first permanent molars recorded. The obtained data were compared with the dental charts in which the carious

lesions in the deciduous first molars had been recorded three years previously.

Although this comparison was not conclusive, it became evident that the number of carious lesions in the permanent first molars was almost identical with that in the deciduous first molars. Only an insignificant difference existed in the number of permanent first molars free of carious lesions and the number of deciduous first molars free of carious lesions.

In the same individual, the health of the deciduous dentition and that of the permanent dentition, therefore, appears to be—at least to a certain degree—related.

Municipal Hospital, Baja, Hungary

An auxiliary preventive treatment for dental caries and periodontal disease: the "Asba" therapy

Ch. Guignard. *Parodontol., Zürich* 13:30-35
April 1959

About fifty years ago, Albert Senn, a dentist of Zurich, Switzerland, described a treatment for the prevention of dental caries and periodontal disease, which treatment later became known as the "Asba" therapy.

The "Asba" therapy is being tested in various European dental schools, especially at the Dental Institute of the University of Geneva. It consists mainly in the application of two specific tooth powders, a red powder in the morning and a green powder in the evening combined with a liquid mouthwash. Although the percentage of each component is not given by the manufacturer, the Swiss Inter cantonal Office for the Control of Medical Supplies has published their formulas. Aluminum acetate is the basic ingredient of the green powder, acting as a decongestive astringent of the fibrous elements of the tooth ligament. In penetrating into the gingival pockets, aluminum acetate has a fortifying action on the supporting fibers, thereby accelerating a favorable action on the periodontal tissues.

Ems salt (monohydrated sodium carbonate) forms the main part of the red or morning tooth powder. The reactivation of the tooth supporting tissues by application of chemically related salts has often been reported. Ems salt possesses the

additional quality of reducing the accumulation of calculus. The origin of the accretion of calcium carbonate and phosphate from the saliva is unknown, and so far no dissolvent of calculus has been found which does not injure the tissues.

An extract of poppy capsules and seeds is added in minute quantities to both powders. The amelioration of sensitiveness in the periodontal region probably is due to this extract. Camphor, added to the green powder, and mint, present in all three components of the "Asba" therapy, act as antiseptics.

Calcium carbonate, boric acid and tartaric acid are constituents of the evening powder.

A complete clinical, roentgenographic and functional chart was established at the clinic for each patient observed.

The patients were instructed to use a dry toothbrush, dipped in "Asba" powder and to brush the teeth and the surrounding tissues as energetically as possible three times daily.

Patients with periodontal disease (Group I) presented a significant decrease in pain and a diminution of most symptoms after from 7 to 15 days.

The results were more satisfying in Group II, patients after gingivectomy, and in Group III, patients after scraping and grinding. Ten days of energetic brushing with the "Asba" powders resulted in complete relief from pain, hypersensitivity and inflammation; even a period of treatment interruption did not result in a recurrence of the symptoms.

The "Asba" mouthwash has an undeniable cicatrizing effect, especially after tooth extractions, curettage, scraping and surgical interventions. Whether used as a rinse or in a compress placed on the infected or inflamed regions of the oral mucosa, it achieved quick relief from pain and assisted in uneventful healing.

It can be concluded that the "Asba" therapy is an effective auxiliary treatment in the prevention and cure of caries and periodontal disease. Although this method has obtained excellent results in private practice, further systematic research should be made in well-equipped dental institutes to obtain scientific evidence of its action.

Neither the "Asba" therapy nor any of its components is advertised commercially.

4 Place Neuve. Geneva, Switzerland

Proteolysis-chelation theory and the etiology of dental caries

Albert Schatz, Joseph J. Martin
and Vivian Schatz. *Rev. Belge Sci. dent.*
13:538-557 Dec. 1958

The etiology of dental caries has been controversial for almost a century. The proteolysis-chelation theory of the etiology of caries has been formulated as a working hypothesis to attack an old problem in a new way. This new approach offers a philosophically broader and potentially more fruitful perspective for studying the following aspects: (1) how caries occurs; (2) why it occurs, and (3) how it may be prevented.

Chelation, sequestration, complexation and other nonacid reactions are responsible for solubilization and transport of ordinarily insoluble mineral substances. This has been recognized in geology, soil chemistry, biochemistry, fertilizer industry and other fields. The application of this knowledge to the caries problem, therefore, does not introduce anything new. It recognizes and accepts only the thesis that occurrences in the oral cavity are identical to those occurring elsewhere in nature under similar conditions and in similar situations.

Perhaps the main reason why the effect of acid on enamel has not yet been fully clarified has been the emphasis on hydrogen ion concentration (pH) and the neglect of the complex ability of acid anions. Some dental researchers deny that oral bacteria produce well-defined substances capable of chelating calcium, despite the fact that lactic acid shows a calcium chelating activity. The main issue is not to determine whether oral bacteria elaborate substances which chelate calcium but to find out which complexing agents are most important in caries etiology, how and where they originate, and what are the means to check their formation and activity.

Chelation has been discussed only to a limited extent in dental literature. The proponents of the proteolysis-chelation theory consider caries from a perspective diametrically opposed to the conventional or orthodox views. They look on enamel as an essentially organic structure that is associated with large amounts of inorganic matter to satisfy mechanically its functional requirements.

They consider caries to be like any other infectious disease as an attack on an organic body structure (enamel). All infections disturb the mineral balance locally and systematically; caries disrupts the inorganic substance in teeth when the organic components are attacked. In this respect, caries is not unique but an infectious disease like any other.

The proteolysis-chelation theory is supported by evidence and is concerned essentially with the mechanics of caries; that is, the fact that calcium chelators derived from protic metabolism are able to dissolve apatites in the mouth, and that demineralization is not a prerequisite for the organic matter to undergo microbial attack. Proteolysis-chelation is not restricted to protein alone but embraces all organic matter in enamel and dentin as well as all complex reactions. It is the first theory capable of accounting for the simultaneous destruction of both the organic and inorganic components of enamel by one fundamental mechanism that is not necessarily dependent on pH.

The authors are aware that much in the proteolysis-chelation theory is provocative and controversial. But most progress has its origin in disbelief and disagreement. It is as true in caries research as in other scientific fields: "we can never prove we are right unless we are willing to run the risk of being wrong." There is but one safe way to avoid mistakes: to do nothing or, at least, to avoid doing something new. This, however, in itself, may be the greatest mistake of all.

1101 Edann Road, Orelan, Pa.

Investigations of the use of toothbrushes in The Netherlands and United States: a comparison

O. Birman and B. Kantorowicz.

Tschr.tandheelk. 66:274-276 April 1959

In 1955, the Medinos-Prodent Research Laboratory in Amersfoort, The Netherlands, investigated the toothbrushing habits of the Dutch population. The results of this study appeared in *Tijdschrift voor Tandheelkunde* 62:505-512, July 1955, and in *Dental Abstracts* 1:366-367, June 1956.

In 1958, the Plastics Products Division of E. I. Du Pont de Nemours & Co. in Wilmington, Delaware, in cooperation with the American Dental Association, carried out a similar investigation to determine the average use of toothbrushes in the United States. The results of this study appeared in the *Du Pont Magazine* 52:5-7, June-July 1958, and in *Dental Abstracts* 4:18, January 1959.

The authors have compared the average figures obtained in the first investigation (N) with the findings of the second investigation (USA), thereby reaching the following conclusions: (1) number of toothbrushes examined, 942 (N) and 2,032 (USA); (2) average time of the use of a toothbrush, 15 months (N) and 10 months (USA); (3) percentage of toothbrushes used for less than a year, ± 45 per cent (N) and ± 85 per cent (USA); (4) percentage of toothbrushes used longer than a year, ± 55 per cent (N) and ± 15 per cent (USA); (5) duration of use of the oldest toothbrush examined, 23 years (N) and 13 years (USA); (6) percentage of toothbrushes used regularly from three to four times daily, 7 per cent (N) and 15 per cent (USA); (7) percentage of toothbrushes used regularly twice daily, 36 per cent (N) and 50 per cent (USA); (8) percentage of toothbrushes used regularly once daily, 39 per cent (N) and 29 per cent (USA); (9) percentage of toothbrushes used irregularly, that is from one to four times weekly, 18 per cent (N) and 6 per cent (USA), and (10) percentage of toothbrushes completely worn out but still in use, 67 per cent (N) and 65 per cent (USA).

The American investigator, Robert G. Kesel, of the University of Illinois College of Dentistry, concluded his reports as follows: "American toothbrushing habits may have improved, but they still leave much to be desired." The Dutch toothbrushing habits, however, have not been improved and are far below the American standard. In both countries, the importance of home training in oral hygiene should be emphasized because proper tooth cleaning with a good brush after each meal is still the most effective procedure known to prevent caries and periodontal disease.

Medicos-Prodent Research Laboratory, Amersfoort, The Netherlands



Figure 1 Front view of College of Dentistry, University of Freiburg. To the left are the classrooms, the dormitories are above, and to the right the clinic and polyclinic

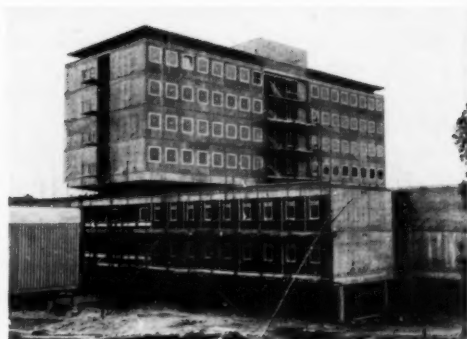


Figure 2 Another view of the building showing the clinic and polyclinic in the center, the dormitories above, and to the left the auditorium which is a separate building

Education

The new building of the College of Dentistry of the University of Freiburg: an example of modern architecture

Fritz Wiedermann. *Zahnärztl. Welt & Reform* 59:642-643 July 25, 1959

The architecture of a new school building, especially that of a dental school, must meet the classic principles of utility, strength and beauty, and yet the distinction of such a building depends on its architectural design. The design of the new building of the College of Dentistry of the University of Freiburg/Breisgau, Germany, proved the architect to be an artist. The wide areas of space assure ease, convenience and economy of use.

The designing and erecting of such a modern school building demanded from the architect not only the highest skill in creative ability and workmanship but also an extensive knowledge of how to use the new materials available, to facilitate the planned extension of the school's educational program, simultaneously rendering opportunities to the dental students to work effectively in cooperation with the medical faculty, the laboratories and the roentgenographic department of the university.

There is a new spaciousness visible to the observer which provides classrooms, operating theatres, auditoriums, clinics, laboratories, dormitories and the offices of the members of the faculty. One of the leading principles in the organic architecture of this modern school building is expressed by its unity within diversity, with the outer and inner spaces in complete harmony. Its two main structures, superimposed on each other, show continuity and liberation prevailing throughout.

The architect, a student of modern education methods, knew how to safeguard the mental and physical well-being of the dental students during the often very strenuous courses by surrounding them with elements of security and assurance that will protect their health, eyesight and general physical condition.

A large centralized school building seemed to be the only adequate means of meeting the requirements of modern dental education. One fact, however, must be considered—that there is a distinct limit to the number of students a dental educator is able to handle. This problem was solved by creating rather small classrooms of uniform size and shape. The entire school program can revolve around these classroom units. Unilateral lighting is provided. Wide corridors,

leading to exits, stairways, auditoriums and lecture halls as well as to the various offices, adjoin the classrooms. The height of the ceilings appears to be ample for ventilation.

Although the new school building is not a skyscraper, the spacious seven floors will provide an almost ideal hall of learning for the coming generation of German dentists.

Hasenbergersteige 107, Stuttgart W, Germany

Dental education in Japan

Bogo Koinuma. *J.Nihon Univ.School Den.*
1:247-249 June 1959

Since the end of World War II, the curriculums in Japanese dental colleges have been brought into fair conformity with those in American dental colleges, based on recommendations of the United States Education Commission.

The seven dental schools in Japan are: Tokyo Medical and Dental University; Nihon Dental College; Tokyo Dental College; School of Dentistry, Osaka University; Osaka Dental College; Kyushu Dental College, and Nihon University School of Dentistry. Two are federal institutions, one is financed by a province, and the remaining four are private schools.

The curriculum at the Nihon University School of Dentistry typifies dental education in Japan today. Graduates of accredited high schools are admitted to the two-year predental course. Subjects studied are as follows:

First year, predental: biology, economics, chemistry, mathematics, physics, law, ethics, physical education, Japanese, English and German.

Second year, predental: statistics, political economy, psychology, European history, logic, medical Latin, dental English and dental German.

First year, dental: physiology, dental technology, anatomy, oral mechanism, complete dentures, biochemistry, embryology, oral anatomy, introduction to dental science, histology, oral histology, oral physiology, German and English.

Second year, dental: pedodontics, crown and bridge, pharmacology, oral surgery, dental pharmacology, partial dentures, operative dentistry, bacteriology, pathology, surgery, internal medicine, hygiene, oral pathology, oral bacteriology, orthodontics, German and English.

Third year, dental: roentgenology, anesthesiology, operative dentistry, esthetics, oral therapy, oral diagnosis, oral hygiene, ophthalmology, psychiatry, otorhinolaryngology, forensic medicine, dermatology, pedodontics, oral surgery, English and German.

Fourth year, dental: clinical work, lectures, work in hospital, dental English and dental German.

The student spends his fourth year in dental college mainly in the hospital attached to the school of dentistry, and works on patients. To qualify as a dentist, he must pass the National Dental Certification Examination.

At the Nihon University School of Dentistry, more than half of the students' fathers are dentists; they will succeed their fathers when the latter retire. The school also trains dental nurses and dental technicians, in courses lasting one year and four years, respectively.

About 30,000 dentists are registered in Japan. They are members of the Japan Dental Association, which is headed by Kazuo Sato, founder of this school, and school counsellor.

Nihon University School of Dentistry, Surugadai, Chiyoda-ku, Tokyo, Japan

Licensure

The use of gold foil as a requirement for licensure

J.Am.Acad.Gold Foil Operators 2:16-17
May 1959


Returns from questionnaires mailed to the boards of dental examiners of all states, territories and the District of Columbia elicited the following information:

1. Thirty-three of the 52 boards (63 per cent) require the candidate to prepare and condense a gold foil restoration.

2. Eleven of the boards (21 per cent) do not require the use of gold foil.

3. Six of the boards (12 per cent) permit the candidate a choice of materials.

Baltimore College of Dental Surgery, University of Maryland, Baltimore 1, Md.



Organization

History of the F.D.I.

W. Stewart Ross. *Internat.D.J.* 9:160-166
June 1959

The first international dental congress was held in Paris in 1889, the second in Chicago in 1893, and the third in Paris in 1900. At the third congress, Charles Godon, dean of the École Dentaire de Paris, proposed that a permanent international body be established to sponsor international dental congresses. In August 1900 the Fédération Dentaire Internationale was constituted and it was agreed that the national committees appointed by the congress would remain in office and constitute the Fédération Dentaire Internationale. Apart from the International Red Cross, the Fédération Dentaire Internationale is the oldest international professional body in existence; it has survived two world wars, and today there are 56 national dental associations as affiliates, representing about 200,000 dentists in 45 countries. The Fédération was formed to sponsor and organize international dental congresses every five years. The first step was the election of an executive committee which would meet every year and proceed with arrangements for the next congress. Year by year the activities of the organization have been expanded. Today the Fédération has its secretariat in London.

Annual meetings are held in different countries; a scientific program has been added to the business meeting. Attendance at the Rome Congress in 1957 reached almost 10,000 from 75 countries. If the quinquennial congresses become much larger, few cities in Europe can provide the necessary facilities and accommodations. Table clinics, demonstrations, films and a large industrial exhibition are features of the congresses. The language difficulties are met by a comprehensive system of simultaneous translation in the five main

languages of the Fédération, that is, English, French, German, Italian and Spanish.

The *International Dental Journal* was founded in 1950, with Professor H. H. Stones, of Liverpool, England, as its first editor. The journal is published quarterly in the Hague, The Netherlands, by Messrs. Sijthoff, and is printed in the English language with captions and summaries in French, German, Italian and Spanish.

In 1952, G. H. Leatherman became secretary-general, and a secretariat was opened in London.

It had long been realized that the national dental associations affiliated with the Fédération Dentaire Internationale were unable to provide sufficient funds toward its increased activities; in 1946 the assistance of individual dentists was solicited, and supporting memberships were solicited for an annual subscription of £1 (today, £2). Benefits include reduced rates of subscription to the *International Dental Journal*, to the annual meetings and the quinquennial congresses, and a free subscription to the quarterly *Newsletter*.

Each national association affiliated with the Fédération has a committee which recommends or elects delegates to the Fédération's annual meetings.

In August 1948 the Fédération became affiliated with the World Health Organization as a nongovernmental organization representing international dentistry. Collaboration is close; representatives and observers are invited to attend the respective meetings of the two organizations. A "Directory of Dental Schools Throughout the World," to be published by the World Health Organization with the help of the Fédération, is in preparation.

At each annual meeting of the Fédération, the council and general assembly hold their sessions. National dental associations with a membership of up to 1,000 are represented by one voting delegate; up to 5,000, by two delegates; and up to 15,000 by three delegates; the maximum possible number of delegates is five. Subscriptions from member associations in 1960 will be based on a scale of \$22.40 per 100 members, up to a total of \$8,960; the latter figure applies only to the United States; the next largest national dental association, that in Germany, will pay \$7,145.

The Fédération, at its annual meeting in Brussels in 1958, unanimously approved a new consti-

tution which includes provision for a speaker to preside at future meetings of the general assembly.

The thirteenth quinquennial World Congress of the Fédération will be held in Cologne in 1962. The Fédération Dentaire Internationale can look with pride on its past achievements and with optimism to the future.

25 Harcourt House, 19 Cavendish Square,
London W.1, England

History

The romance of healing

Rustom Jal Vakil. *Hamdard M.Digest* 3:18-35
April-May 1959

The art of healing probably is as old as man himself. The primitive, aboriginal or prehistoric man, evolving from an anthropoid existence, must have been stunned by the occurrence of pain, affliction and disease. Although he could hardly have failed to understand pain or disability resulting from obvious causes such as animal bite, fall, impact of a club, piercing arrows or spears, he must have found it almost impossible to explain seemingly causeless pains, fits and faints, convulsions, paralysis, blindness, skin eruptions, and death. Since prehistoric man could not grasp the significance of certain phenomena, he tried to explain these in terms of demoniac forces. Demons and evil spirits produce disease and death: this was the belief of primitive man, and traces of the demoniac explanation of disease were found in the early writings in almost every ancient center of learning, including Egypt, Macedonia, China, India and Arabia.

After creating the imaginary forces of good and evil, primitive man had to search for mediums to counteract disease. He found them in witch doctors, medicine men and magicians. Unknowingly, he thereby created the profession of the healing art.

Assyrio-Babylonia can be regarded as the most ancient center of culture, its civilization antedat-

ing by many centuries those of Egypt, India and China. Remedies such as pills, powders, decoctions, enemas and poultices, and methods such as bandaging, massaging, bloodletting, sponging and cupping were known to the Babylonian *asus* (healers) who used them in treatment of indigestion, oral, nasal and ocular infections, and venereal and other contagious diseases. The code of Hammurabi, King of Babylon (about 1,955-1,913 B.C.), regulated the conduct of physicians and their remuneration. Any violation of the code, especially what is now called malpractice, was punished by cutting off the physician's or surgeon's hand.

Egypt undoubtedly was the most civilized country of the ancient world. The Egyptians possessed large libraries and important schools of learning before 1,300 B.C. Of the many ancient Egyptian papyri, discovered after centuries, the most interesting is the Ebers papyrus, a medical text, 65 feet long and more than 1 foot wide. The papyrus contains 2,289 lines of hieratic script and probably was written before 1,500 B.C., although certain passages date back to the time of the First Egyptian Dynasty (3,500 B.C.). The Edwin Smith papyrus, a surgical text, probably was written before the construction of the pyramids (3,000 B.C.). This papyrus reveals that the ancient Egyptians knew the circulation of the blood and the pumping action of the heart, facts which were scientifically demonstrated thousands of years later by William Harvey. The mystic letter R which appears on every medical or dental prescription today, is a symbol of Egyptian healing art, about 5,000 years old, and representing the eye of Horus, the all-creating and all-protecting god. This symbol was used as a charm against disease and death.

The Hindus in ancient India kept pace with the most enlightened peoples of the world, and they attained as thorough a proficiency in the healing arts, especially medicine and surgery, as any other ancient people whose achievements have been recorded. Although the practice of healing in India was a prerogative of the priests, there is no doubt that the Hindu healers had acquired a high educational standard and had excelled in the practice of surgery and therapeutics before the classic Greek culture. The Atharva Veda contains numerous descriptions of diseases

and innumerable remedial procedures. The Rauwolfia plant, recently rediscovered and used in the production of the so-called tranquilizers, is mentioned in an ancient Hindu manuscript written more than 2,000 years before Christ.

The culture of ancient China is distinguishable from that of every other country because China was completely separated from the rest of the world and there existed no exchange of knowledge, experience or thought. Medical knowledge in China usually was transmitted from the Taoist physician to his favorite son or pupil. Diagnosis depended on the study of the pulse and the condition of the tongue or the facial appearance. The *Nan Ching*, written during the era of the Chow Dynasty (1,123 to 256 B.C.), was the standard medical textbook, containing descriptions of many diseases and a gigantic pharmacopoeia listing thousands of remedies. Ephedrine produced from the *ma huang* plant (*Ephedra equisetina*) is chemically related to epinephrine. The ancient Chinese healers used acupuncture and moxibustion. A surgeon who failed to save his patient's life could be tried for murder, and a physician was paid only if he kept his patient healthy.

Although the ancient Persians did not leave Vedas like the Hindus, clay tablets like the Babylonians or papyri like the Egyptians, there is evidence that Persian priests of the cult of the god Ahuramazda practiced the healing arts. Medicine was classified into three main forms: (1) knife healing (surgery); (2) herb healing (therapeutics) and (3) word healing (similar to the system of healing practiced by the Christian Scientists). The present-day classification of diseases into somatic, psychic and psychosomatic forms was known to the Persian physicians many centuries ago.

The more we study the history of the healing arts, the more we become convinced of the fact that it continuously repeats itself. Considering that our ancestors were faced with the task of initiating inquiries and accumulating clinical observations without previous experience or instruments, the men who practiced the healing arts in the ancient world, outside the classic and often overrated Greece and Rome, were extremely successful in their quest for truth and knowledge.

Nazimabad, Karachi 18, Pakistan

Forensic dentistry

Physical individuality and the problem of identification

Viken Sassouni. *Temple Law Quart.* 31:4:2-12
Summer 1958

During the second half of the nineteenth century, government agencies adopted several systems for identifying persons. Bertillon in France, between 1882 and 1893, probably was the first to propose a set of anthropometric characteristics and a workable classification for their practical use. He proposed that 11 measurements be taken—7 on the body and 4 on the head (head length and breadth, face breadth, and length of right ear). The 11 measurements enabled the isolation of one person out of 177,147 persons. Galton in 1893 proposed a system of fingerprinting. Most governments have adopted fingerprinting as the method of choice for identification of the living. However, fingerprints are dependent on tissue which may be missing in mass casualties, and there is a need for other methods of identification. Several other methods have been proposed but most are based on soft tissue and are subject to the same criticism as is fingerprinting.

Facial photography was introduced by Bertillon and still is widely used. The physioprint was devised by the author to permit detailed classification and comparison of photographs. A system based on the rugae and papillae of the palate has been proposed but has not received extensive and systematic application. Many identification systems based on the teeth have been proposed. One shortcoming of the dental classification is that the dental chart (unless kept up-to-date) will not reflect extractions, reconstructive work or post-mortem loss of teeth. Bones have been used extensively for identification purposes. Stature and body build have been estimated by measuring remains. Estimates of age have been based on cranial or pubic suture closure; on tooth eruption, and on centers of ossification of the hand, knee,

foot and epiphyses of long bones. Race has been determined by evaluation of findings based on dental morphology (Lasker and Lee, 1957). Soft tissue of the face has been reconstructed either from mummified remains or from the skull.

Because bones are enduring, and because roentgenographic technics permit the taking of pictures of bones both in the living and the dead, attention has been focused on roentgenography as a means of identification, particularly of the head and face.

Roentgenographic cephalometry was first developed when Broadbent in the United States and Hofrath in Germany created instruments permitting a high degree of standardization, in 1931. Most of the studies have been conducted by orthodontists.

The present study was undertaken to investigate the feasibility of using an identification system based on the craniofacial complex as seen in roentgenographic films taken with a Broadbent-Bolton cephalometer. Only frontal films were used, and the following eight measurements were taken: bigonial breadth, mastoid to apex height, bimaxillary breadth, bizygomatic breadth, maximum cranial breadth, sinus breadth, incision height, and total facial height.

Two sets of roentgenograms (representing "antemortem" and post-mortem records) were made of 500 men. From the second set of 500 frontal films, 100 were taken at random, measurements were made, and with the aid of a Univac machine an attempt was made to match the 100 films in the "antemortem" set of 500. In 74 of 100 tests, one answer, the right one, was obtained. The remaining 26 roentgenograms represented those in which errors of measurement had been made either on the antemortem or postmortem series. A method of cross-checking permitted the location of the errors, and 23 of the 26 films were identified, for an identification record of 97 per cent. The three remaining films either could be identified by further cross-checking or could be left until all other films were identified and the three films compared directly with the remaining films in the other set.

In the proposed system of identification, errors of measurement can be reduced by increasing the size of the roentgenograms, by standardizing equipment, and by training technicians. Further

research seems warranted. The existence of high-speed computing machines offers vast possibilities in coding and storage.

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Dentistry
around the world

The Nova Scotia program: what, why and how?

W. Gordon Dawson. *D. Health Newsletter* 1:4-8
Autumn 1958

The Division of Dental Services of the Department of Public Health in Nova Scotia directs its main services and educational efforts to children from 3 to 12 years old.

Mobile dental units have been used since 1919. Today, two large trucks, equipped to serve as movable dental offices, are used to provide limited dental treatment for children in remote rural areas. The trucks secure electric power from the school or hall adjacent to where they are parked. A half-ton panel truck also is used; it carries portable dental equipment which can be set up in a schoolroom or community hall. Each mobile unit is staffed with a dentist and a dental assistant. At every rural area visited, a volunteer worker arranges appointments and transportation.

In 1955 a dental hygienist service was started by three young women who had received grants for professional training in dental health. The service is available to larger villages and small towns that can supply a suitable site where the hygienist can set up the portable dental equipment. The hygienist carries out dental examinations and prophylactic treatments, and gives instruction in the proper toothbrushing technic. Younger children in communities without public water supplies receive topical fluoride applications. Notices are sent to parents or guardians of children in need of dental care. Group instruction is given to junior high and high school students. Each hygienist has a sedan delivery truck

to carry her equipment and to provide transportation.

In two areas visited by the mobile dental units, home and school associations have purchased dental equipment and arranged for the part-time services of a dentist. In a third area, the home and school associations employ a dentist by the day and transport groups of children to his office.

The demand for the dental hygiene service continues to increase; at present five hygienists are employed, and the employment of four more hygienists is planned.

Since 1956, 20 per cent of the residents of Halifax, Dartmouth and Kentville have been receiving the benefits of fluoridated water.

Teachers and nurses are enlisted to aid the Division of Dental Services in its educational effort.

Division of Dental Services, Department of Public Health, Halifax, Nova Scotia, Canada

Dentistry on the mission field

Sandy C. Marks. *J.N.Carolina D.Soc.*
42:301-305 Aug. 1959

The School of Dentistry at the Christian Medical Institute of the Presbyterian Mission in the Belgian Congo is the only dental school in this colony, which has a population of 13,000,000 people. In the Congo, the ratio of dentists to population is 1:350,000.

In the pioneer days of mission work in the Congo, some missionaries were urged to have all their teeth extracted and dentures made before going to the Congo, to avoid dental emergencies. Some of the early missionaries recognized the great need for dental care; while on furlough in the United States, they studied under practicing dentists and returned to the Congo to do "evangelistic extractions in the native villages."

The author went to the Congo in 1948 with two purposes in mind: to care for the dental needs of the 160 Presbyterian missionaries and their children, and to train the natives in dentistry. As soon as word got out that there was an American dentist in the mission, European patients from as far away as 500 miles started coming to seek dental services. Professional fees were charged such patients, and the fees were used to finance the construction of buildings for a dental school. Most

of the equipment was given the school by friends in the North Carolina Dental Society and its auxiliary, and by friends in the Richmond Dental Society.

It was decided to teach in the French language since it is the official language of the government of the Belgian Congo. In cooperation with the mission's medical department, plans were made to establish a Medical Institute, to consist of a School of Nursing (male), a School for Laboratory Technicians, and a School of Dentistry. The teaching staff consisted of two physicians, two dentists, two nurses, and one technician. Through correspondence with the chief medical officer of the colony, a curriculum for the dental school was worked out; it consisted of 22 courses to be taught in French over a period of three years, to be followed by a two-year internship before a diploma is awarded. Eleven of the courses are in the basic sciences and taught in the same classes attended by students of the School of Nursing. A new class in the School of Dentistry was planned for every other year.

The Congolese Dental School opened in 1955 with an enrollment of 19 students; in June 1958, 6 of the 19 finished the three years of theory, laboratory and some practical work, and are now serving their two-year internships. A second class of 11 students was started in the fall of 1957. Graduates are able to make simple extractions under local anesthesia, partial and complete dentures, simple restorations, simple bridgework, and to carry out prophylaxis and roentgenography.

Because of the widespread poverty in the Congo, the tuition fee in the Dental School was set at \$10 a year. Students receive food, lodging, clothes, books, medical care and all necessary supplies. The cost to the mission for each student per year is about \$100.

Graduates are offered work in the mission's hospitals and clinics, at a monthly salary which doubles the amount of money they spent for their entire dental education. If they decide to work for the government or in the hospitals of the mining companies, they receive salaries much higher than those paid by the mission. These native dentists are being trained as Christian witnesses in dentistry, to fill a great need in their land.

Presbyterian Mission, Belgian Congo

Pathology

Research on cutaneous wound healing

M. Campani. *Panminerva Medica* 1:120-121
July-Aug. 1959

The presence of two specific chemical substances of phlogistic origin, hyaluronic acid and acetylglucosamine, in pathologic liquids was determined in 1952. It was believed that the accumulation of these substances was "a consequence of cellular and chemical modifications caused by inflammation in mesenchymal, that is embryonic connective tissue composed of stellate cells and a ground substance of coagulable fluid." Because in this tissue particular substances, called "mucins" had been identified long ago, it appears likely that the substances present in exudates originate from mesenchymal tissue as products of a recessive change or, more probably, as a result of hyperactivity.

In order to verify this hypothesis, studies of the healing tissues of wounds were carried out at the Institute of Surgical Pathology of the University of Pavia, Italy.

Although the development of the healing tissues of wounds is known from the morphologic point of view, hardly any research has been done on its biochemical aspects.

The basic substance of the healing tissues of wounds assumes a violet-crimson color after staining with toluidine-blue, and the present study revealed that this metachromasia disappears when sections of these tissues are treated with hyaluronidase before staining. Specimens taken five days after infliction of surgical wounds (in the cutaneous tissues of the face or the mucous membrane of the oral cavity) retained the red color after zymotic treatment. This seems to prove that the basic substances have undergone substantial chemical changes or modifications.

The investigation, therefore, was directed to the behavior of acetylglucosamine and sulfur in

the healing tissues of wounds, because these chemical substances are active in the formation of certain acid mucopolysaccharides such as hyaluronic acid, sulfate hyaluronic acid, chondroitin-sulfuric acid and mucoitin-sulfuric acid. These acids are essential components of the basic substance of connective tissue and have an observable metachromasia.

The acetylglucosamine values of the healing tissues of wounds in the facial and oral regions are shown in Figure 1. Acetylglucosamine reaches its peak value on or near the sixth day after infliction of the wound, declining later to the initial values. An almost opposite value trend is shown by sulfur in Figure 2. The behavior of S^{35} content in the healing tissues reveals that its value falls from the initial high peak to a low on the eighth day after infliction of the wound. After this low, the sulfur value rises again until the fifteenth day (the last day considered in this study).

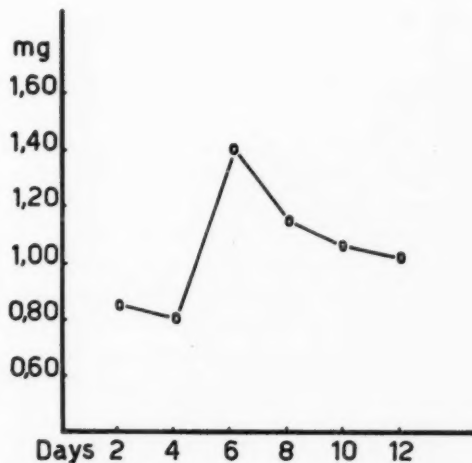


Figure 1 The acetylglucosamine values in the healing tissues of facial and oral wounds from the second to the twelfth day

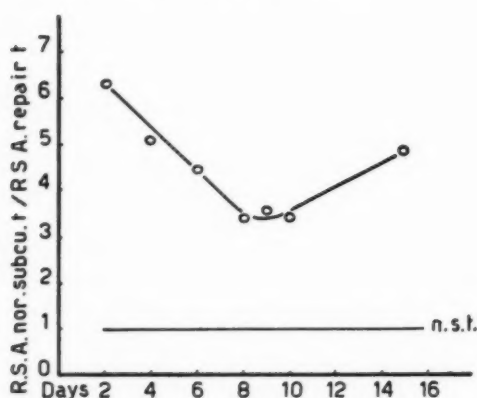


Figure 2 The sulfur ion (S^{2-}) values in the healing tissues of facial and oral wounds from the second to the sixteenth day

These results agree partially with those obtained by L. L. Layton (1950), who, however, did not investigate the phenomenon in its entity and gave no indication of the modality of the sulfur ion.

To clarify this chemical aspect and to obtain an understanding of the repair process of facial or oral wounds from the biochemical view, another series of experiments was carried out.

The results of these studies are as follows:

1. The healing process of facial and oral wounds can be divided into four stages.

2. The first stage, called the "transudatory" stage, is characterized by the formation of blood coagulum at the site of the wound.

3. The second stage, called the "productive" stage, is characterized by an extensive cellular proliferation activity (fibroblasts) starting on the second or third day after infliction of the wound and lasting to the sixth day.

4. The third stage, called "biochemical-metabolic" stage, is characterized by intense biochemical and metabolic processes which are active between the sixth and the tenth day.

5. The fourth stage, called the "collagen" stage, is characterized by the formation of collagen and collagenous fibers as well as by a gradual cell diminution.

Istituto di Patologia Speciale Chirurgica, Pavia, Italy

Epidemiology of diabetes mellitus:

I. Review of the dental literature

R. C. Sheridan, Jr., E. Cheraskin, F. H. Flynn and A. C. Hutto. *J. Periodont.* 30:242-252 July 1959

A review of the medical and dental literature indicates that some of the most common symptoms and signs of diabetes mellitus appear in the oral cavity. About 50 articles dealing with the oral manifestations of diabetes mellitus have appeared in dental literature in the past 20 years; little of the material is of a quantitative nature.

The most common subjective complaints of patients with diabetes mellitus are dry mouth, burning mouth, tender gingivae, sensitivity of the teeth to percussion, and dry sockets.

Among the oral clinical findings reported in diabetic patients are the following: dryness of the lips; gingival signs: swelling, bleeding, violaceous hue, pocket formation and recession; lingual signs: smoothness of the dorsum of the tongue, geographic tongue, tongue coating, redness, enlargement, and fissures of the tongue; and increased tooth mobility, increased tooth loss and a high incidence of dental caries.

The two most discussed roentgenographic oral findings in diabetic patients are alveolar bone atrophy and marginal widening of the periodontal membrane.

The evidence suggests that the more elaborate the screening procedure used, the greater is the incidence of detection of previously unrecognized diabetic patients.

School of Dentistry, University of Alabama, Birmingham, Ala.

Eosinophilic granuloma of the oral cavity in infants

J. Lefebvre and P. Chaumont. *J. radiol. electrol.* 39:705-712 March 1959

Eosinophilic granuloma of the oral cavity, a type of xanthomatosis characterized by a focus of infection within the osseous tissue, and probably related to Hand-Schüller-Christian disease or to Letterer-Siwe disease, has been referred to in recent French literature as a benign condition.

The present study is based on 13 case reports

of patients ranging in age from 18 months to 14 years in whom the disease was manifested at first by localized osseous lesions in the mouth.

Roentgenographic examination has proved to be of little diagnostic or prognostic significance, because in 2 of these 13 patients the roentgenograms suggested a malignant change but the eosinophilic granulomas were benign and could be cured. In the remaining 11 patients, the roentgenograms showed an oval radiolucent area without marginal sclerosis, typical of benign eosinophilic granuloma.

Four of the patients showed visceral infiltration, particularly pulmonary, and died. The multiplicity of osseous lesions is not significant for prognosis as long as there is no visceral infiltration. Extensive lesions in the maxillofacial region provide a rather unfavorable prognosis because of a possible complication (diabetes insipidus).

The development of eosinophilic granuloma in the oral cavity is capricious and unpredictable. Statistically, the age of the patient appears to be the most important factor. Roentgenograms, demonstrating the typical form of an oral eosinophilic granuloma, do not preclude the development of a more serious form which may terminate in death of the patient, if a complicating visceral and especially pulmonary involvement supervenes.

Service central d'électroradiologie, Hôpital des Enfants Malades, Paris 5, France

Studies in sialolithiasis: I. The structure and mineralogical composition of salivary gland calculi

Irving M. Blatt, Reynolds M. Denning, James H. Zumberge and James H. Maxwell.
Ann.Otol., Rhin.&Laryng. 47:595-617 Sept. 1958

In this analysis of 30 salivary calculi from 21 patients, the disciplines of the geologist, mineralogist and microanalytical chemist have been applied. Most salivary calculi occurred singly in this group. The size varied from 1 mm. in circumference and 2 mm. in length to 1.7 cm. by 3.0 cm. Calculi found in the hilus of the salivary gland usually are larger than those found in the duct. The hilar calculus usually is spherical or oval, whereas the calculus from the duct is elongated and resembles a date pit. An amorphous, yellow-

ish to brown resinous material covers the surface. The hilar calculus usually has an irregular, knobby, colliform surface, whereas the surface of the (usually) smaller duct calculus is finely granular.

The structure of a salivary gland calculus is best studied by fracturing the stone across its long axis after the stone has been mounted in beeswax. The split specimen may be remounted in beeswax for stereoscopic microscopy, or embedded in clear plastic and polished for photographing.

The salivary calculus of either parotid or submaxillary gland origin is laminated. Concentric shells of a white, chalky substance are clearly visible between layers of brownish-yellow resinous material. The layers of white material may be as thick or thicker as their resinous counterparts. The alternating light and dark bands may represent stages of growth about a single orb or nucleus.

Microscopic study showed that each calculus is formed by accretion of material, layer on layer. The laminated pattern becomes less conspicuous as the central core is approached, and finally disappears when the nucleus is isolated. The central core appears as a single spheroid mass, of chalky white color, varying in diameter from 0.5 to 1.5 mm. When fragmented, the nucleus appears structureless and without recognizable features. The nucleus is composed of apatite. No foreign organism or inert foreign body was recovered from the nuclei of the 30 calculi examined.

The laminated pattern of the salivary calculus indicates its pattern of growth. The inference is that the physicochemical relationship during growth alternates between an environment causing accretion of a calcareous substance with periods favoring the accumulation of an outer rind of organic, resinous material. Just what initiates or localizes the first stage of accretion is not explainable from this study.

The crystalline component of a salivary gland calculus is practically pure apatite, as determined by optical, roentgenographic and microchemical technics. Carbonate-apatite appears to be the apatite in the salivary gland calculus.

The data presented are based on a study of only 30 specimens. Studies including a larger number of samples are necessary.

University Hospital, Ann Arbor, Mich.

Physiology

Classification of dentine into primary, secondary, and tertiary

Yury Kuttler. *Oral Surg., Oral Med. & Oral Path.* 12:996-1001 Aug. 1959

The most important function of the dental pulp is the formation of dentin, of which there are three types—primary, secondary and tertiary.

Primary dentin is formed by the thickening of the basic membrane between the internal enamel epithelium and the primary mesodermic pulp. First, the network of von Korff's fibers appears, producing the first organic precollagenous (uncalcified) dentin that becomes the predentin. This is succeeded by the dentinoblasts; and, by a process not yet determined, the calcification of the dentin starts. The dentinoblastic column begins to separate gradually, and dentinogenesis advances from the incisal or occlusal portion toward the apex of the tooth to form the primary dentin. In the dentin of the teeth of young persons the tubules are numerous (15,000 to 70,000 per square millimeter), almost straight, and fairly wide, representing a fourth of the dentin.

With the eruption of the tooth, and especially with occlusal contact, the pulp begins to receive the slight aggressive effects of normal biologic function. In response, the pulp forms intermittent layers of secondary dentin, which generally are separated from the primary dentin by a line or demarcation zone which may or may not be noticeable. Secondary dentin is less permeable than primary dentin, and has fewer dentinal tubules. It is darker, and its tubules are more curved, sometimes angulated, less regular and smaller in diameter. Secondary dentin is deposited over primary dentin to better defend the pulp and reduce the size of the pulp cavity. Generally, more secondary dentin is deposited on the floor and roof of the pulp chambers in bicuspids and molars than in other teeth.

When the pulp irritants are more intense or more aggressive and almost reach the limit of pulp tolerance, tertiary dentin is formed. It differs from the afore-mentioned types as follows:

1. It is localized exclusively in front of the irritated zone.
2. The dentinal tubules are irregular, even tortuous.
3. The tubules are either reduced in number or are absent.
4. Calcification is deficient.
5. There are cellular inclusions which convert into spaces.
6. The tonality is different.

This proposed simple classification of dentin may eliminate much of the confusing terminology in current dental literature.

Hamburgo 250, Mexico D.F., Mexico

'Elapsio praearticularis' of the temporomandibular joint

K. Nevakari. *Suomen hammaslääk.toim.* 55:32-64 March 1959

The frequency of condylar "elapsio praearticularis" and its distribution according to sex and age were studied in 200 males and 200 females ranging in age from 6 to 25 years. By elapsio praearticularis the author means the unobstructed dislocation of the condyle in front of the tuberculum articulare ossis temporalis in connection with the maximal opening of the mouth and the condyle's return to the fossa without the movement's having elicited any symptoms of a pathological condition. The phenomenon thus is purely a physiological one, to which Wassmund (1952) applied the term "free physiological subluxation."

Pantomography, the sectional roentgenographic technic developed by Paatero (1952) for obtaining tomograms of curved surfaces, was used.

Elapsio praearticularis was found to occur in about 70 per cent of the subjects. The percentage was practically the same for the two sexes and likewise for the different age groups—6 to 8 years, 10 to 12, 14 to 16, and 20 to 25. The elapsio phenomenon was positively correlated to the magnitude of the maximal opening of the mouth. A slight positive correlation to the depth of the

fossa was noted, insofar as the elapsio appears to occur relatively more frequently in connection with a shallow than with a deep type of fossa. No correlation existed in the material studied between vertical overbite and elapsio.

The maximal opening of the mouth increases with age, and among men more than among women. The depth of the fossa increases steadily with age, but the difference between the sexes is not significant.

A slight positive correlation was noted between the extent of the overbite and the depth of the fossa, but no correlation was perceived between the depth of the fossa and the maximal opening of the mouth.

Dental School, Helsinki University, Fabianinkatu 24, Helsinki, Finland

Biometric studies of developing teeth during fetal and early infant life

Maurice V. Stack. *Biotypologie* 19:113-125 May 1959 [in French]

The processes of tooth formation and growth have been investigated in detail during the last century. Biometric studies of the developing human teeth during fetal and early infant life, however, have been made only recently.

An analysis of the differential tooth growth revealed that in vertebrates the crown development can be measured in regard to specific stages in the mode of growth (Moss and Applebaum, 1957). Measurements made on several sections revealed that after the fifth month of fetal life, the labiolingual width in lower central incisors increases in proportion to the height of the crowns. This indicates that growth changes are limited to the dimensions determined by biometric methods. Lower second molars, however, show an uninterrupted modification in both their shapes and dimensions.

In serial micrometric measurements of 20 developing incisors from which the enamel had been removed, the coefficient of variation of the height and weight ratio varied between 6 and 8.5 per cent. The height of upper central incisors (without enamel) was proportional to the cube root of the weight. The increments of weight of enamel and dentin were almost identical after

an initial deposition of a few milligrams of dentin. The combined weights of dentin and enamel, reduced to the square roots of the actual weights, increased in proportion to the "dental age."

The determination of these relations led to the establishment of a definite ratio between the duration of tooth growth and the dimensions and weights of the crowns.

Square roots of the sums of the crown weights determine the relations between tooth growth and dental age, and may be used to prove whether retardation in tooth growth in embryos three weeks after conception can be ascribed to physiologic or pathologic disturbances occurring during pregnancy. In the biometric study of the developing dentition in infants born after normal pregnancy but who died because of birth injuries, the modified coefficient of variation in the ratio of crown weight and dental age was only 5 per cent.

Growth rates of cuspids and second molars remained logarithmic during the first months after birth. The growth rate of first molars, however, seemed to be somewhat retarded, the increase in crown weight after birth being directly related to the dental age. This retardation appeared to be greater in incisors where the enamel was formed during this period. The retardation in tooth growth during the neonatal period was less observable in the biometric studies of the developing teeth of infants who either survived birth for from one to four weeks, or were stillborn after a pregnancy of from 39 to 43 weeks.

The square roots of the crown weight represent the percentages of the sum of the crown weights in ten types of developing deciduous teeth. The mean percentage, therefore, represented by each tooth type was almost identical in each of three series of ten sets of teeth within total weight ranges of from 0.5 to 0.6 Gm., 0.6 to 0.7 Gm., and 0.7 to 0.8 Gm. In this series the mean coefficient of variation was about 6 per cent, the extreme values being 3.5 and 8.5 per cent.

Biometric studies and mathematical analyses of the obtained biologic data can be employed successfully to estimate the degree of retardation in tooth growth associated with or caused by physiologic and pathologic disturbances during pregnancy.

University of Bristol Dental School, Lower Maudlin St., Bristol 1, England

Histology

Innervation of the teeth: a study by light and electron microscopy

Tore Arwill. *Trans.Roy.Schools Den.* No. 3:1-88 1958 [in English]

The innervation of the pulp, the predentin and the dentin was studied. Palmgren's (1948, 1958) highly selective silver impregnation methods for nerve fibers and reticular fibers were used.

1. In the dental germs of fetuses 13 to 32 weeks old, no nerve fibers could be demonstrated in or near the dentin or the odontoblastic processes, either before or during dentin formation.

2. Intact teeth from human subjects 14 to 65 years old were used in a study of the distribution of nerve and reticular fibers in the pulp and dentin. As a rule, no nerve fibers could be observed beyond the odontoblasts, but in some sections the nerve fibers entered the predentin, where they followed a course outside of and at an angle to the predental tubules. In the mineralized dentin no nerve fibers were discovered. No inter-odontoblastic or supra-odontoblastic plexus was observed. When frozen sections 25 to 100 microns thick were used, the continuity between the nerve bundles in the pulp and the fibers entering the predentin could be demonstrated. The nerve and the reticular fiber could be clearly differentiated.

3. In a large number of sections no definite evidence of nerve structures in the dentin could be demonstrated by electron microscopy. Microtubules with a diameter of 500 to 2,000 angstrom units were found in the dentin, crossing the matrix and continuous with the lumen of the tubule. No nerve fibers could be seen therein. Two types of unmyelinated nerve fibers were demonstrated in the tooth pulp, one of which is supposed to be of an autonomic character and located in the vascular wall. The other one can be seen among the myelinated fibers of a nerve fiber bundle and is regarded as a branch which has shed its myelin sheath.

By the methods employed, no nerve fibers could be demonstrated in the mineralized dentin.

The study contains 25 illustrations and lists 261 references.

Royal School of Dentistry, Stockholm, Sweden

Electronmicroscopic studies of mature human enamel

R. M. Frank. *Actual.odontostomat., Paris* 45:13-35 March 1959

Electronmicroscopic studies of nondecified human enamel were carried out at the Dental Institute of the University of Strasbourg, France, to demonstrate the physical dimensions of the hydroxyapatite crystals and the irregularities in their size and shape.

Electronmicroscopy provided a high magnification of the submicroscopic fibrillar network penetrating the apatite crystals.

The following conclusions were reached:

1. The submicroscopic fibrillar network consists of extremely fine, three-dimensional reticular tissue fibrils, forming the honeycombed meshes.
2. The edges of the apatite crystals, especially in the cervical region of recently erupted teeth, appear to be serrated. The serration probably is caused by the projection of minute organic pellets into the organic fibrils.
3. The number of apatite crystals in each submicroscopic network varies between 20 and 30.
4. The longitudinal axes of the apatite crystals lie at angles between 0 and 45 degrees to the long axes of the prisms. The long axes of the apatite crystals in the interprismatic substance and the adjacent prisms vary between 0 and 90 degrees.
5. The cervical mature human enamel contains at least 50 per cent more organic substances than the cuspal enamel.

The facts, demonstrated by electronmicroscopy, may have an important bearing on the previously established concept that mature human enamel is able to withstand the forces to which it is normally subjected without distortion, fracture or detachment from the underlying dentin.

Dental Institute of the University of Strasbourg, France

Bacteriology

Effect of secretions of the parotid and submaxillary glands on certain oral microorganisms

A. C. Kerr and D. L. Wedderburn. *J.dent.Belge*
50:176-186 May-June 1959

The presence of antibacterial factors in the human saliva has been recognized for many years. Because of the possible association of these factors with oral microorganisms, cells or accumulated food particles, the origin of these factors has not been determined.

The role that secretions of the parotid and submaxillary glands play in the antibacterial activity of the saliva was investigated at the Dental Research Department of Guy's Hospital in London.

Samples of the secretion of the parotid and submaxillary glands were collected by cannulation from seven volunteers. The saliva samples contained no cells and were sterile.

The secretions were tested for inhibitory activity in blood agar, nutrient agar and rogosa agar against *Micrococcus lysodeikticus*, *Lactobacillus casei*, *L. plantarum*, *L. acidophilus*, *Staphylococcus pyogenes* var. *albus*, *Staph. pyogenes* var. *aureus*, and *Streptococcus salivarius*.

Although neither cells nor bacteria were detected in the secretion of the parotid or submaxillary glands, the whole saliva contained a rich and mixed growth of microorganisms as well as epithelial cells and leukocytes.

The experimental evidence indicates that two antibiotic factors are present in the secretions. Factor A, which can be destroyed by heating to a temperature of 75°C. for 7½ minutes; and Factor B, which seems to be stable at high temperatures.

Factor I appears to be active against microorganisms which proved to be insensitive to lysozyme, especially *L. casei*, *L. plantarum*, *L. aci-*

dophilus, *Staph. pyogenes* var. *albus*, *Staph. pyogenes* var. *aureus*, and *Str. salivarius*.

Factor II, like lysozyme, is active against *M. lysodeikticus*.

Because no cells or viable microorganisms were present in any of the sampled secretions, these factors must be derived directly from the glands.

Dental Research Department, Guy's Hospital,
London, England

The inhibitory action of stimulated whole saliva on the in vitro growth of *Clostridium tetani*

Henry A. Bartels and Harry Blechman.
Oral Surg., Oral Med. & Oral Path.
12:1141-1146 Sept. 1959

Infections caused by *Clostridium tetani* subsequent to oral trauma or oral surgical procedures occur rarely. Three possibilities to explain the failure of *Cl. tetani* to colonize as members of the oral microbiota are: (1) these microorganisms may seldom gain entrance into the oral cavity; (2) suitable environmental conditions do not obtain for spore germination or the propagation of vegetative cells, and (3) the indigenous microorganisms or inhibitory factors in the oral cavity modify or inhibit colonization. A study was undertaken to determine whether freshly stimulated whole saliva contains some factor which may inhibit the in vitro growth of *Cl. tetani*.

The experiments showed that freshly stimulated whole saliva contains a factor which under in vitro experimental conditions inhibits the growth of *Cl. tetani*. The factor is distinct from lysozyme, since crystalline purified lysozyme 1:1,000 had no observable effect on the tetanus bacillus while inhibiting completely *Micrococcus lysodeikticus*. Heating the saliva for 15 minutes at 100°C. and filtering it through the Seitz filter eliminate the oral microbiota and the inhibiting factor. The factor appears to be associated with the oral microbiota. Exposure of tetanus spores to the oral microbiota does not destroy the spores but does inhibit their germination.

College of Dentistry, New York University,
New York, N.Y.

Biochemistry

Histochemical studies of the localization of alkaline phosphatase in normal gingivae

Antonio Baratieri. *Rass.trim.odont.*
39:285-308 July-Sept. 1958

Histochemical studies have revealed the presence of alkaline phosphatase in almost all tissues of the human body. There are, however, only a few reports on the presence and localization of this enzyme in the gingiva. A histochemical investigation to demonstrate the presence of alkaline phosphatase, its pH and its enzymatic actions and reactions, was carried out at the dental clinic of the University of Pavia, Italy.

Only clinically and histologically healthy gingival tissue was used. The specimens were taken from humans and baboons. Gomori's staining method was employed; it permits the histologic demonstration of phosphatases and lipases. Fixation was carried out with 80 per cent alcohol at 4°C. The specimens were embedded either in acetone or in 1:200 solutions of acid Formalin and were kept in incubators. The pH of sodium glycerophosphate varied between 6.4 and 9.2. Magnesium ions in the form of 2 per cent magnesium chloride were employed as catalyzing agents.

Enzymatic activity of alkaline phosphatase was observed especially in the gingival corium adjacent to the epithelial tissue; that of acid phosphatase appeared more or less condensed around the vessels and collagenous fibers.

In vessels with comparatively thick walls, the strongest enzymic activity was found in the endothelium. The internal limiting membranes showed no enzymatic action.

The hydrolysis of sodium glycerophosphate with different pH showed a decrease in phosphatase activity immediately after the medium used became acidified.

The hydrolysis of lecithin showed an enzymatic activity in the nuclei of the corium near the epithelial tissues.

The hydrolysis of nucleic acid showed the presence of alkaline phosphatase in the gingival epithelium, especially in the basal layers.

The results obtained verified the findings of R. L. Cabrini and S. A. Carrapza (1958) who proved the localization of acid and alkaline phosphatases in the epithelium and the role the enzymatic activity plays in the process of keratinization.

Clinica Odontoiatrica, Scuola di Specializzazione in Odontoiatria e Protesi Dentaria, Università di Pavia, Italy

Esterase activity associated with formation of deposits on teeth

Paul N. Baer and M. S. Burstone. *Oral Surg., Oral Med. & Oral Path.* 12:1147-1152
Sept. 1959

This is the first report in the literature of enzyme histochemistry as a tool in the study of calculus formation.

Mylar strips, 6.5 microns thick, were fastened to the lingual surfaces of the lower incisor teeth of patients admitted with a diagnosis of periodontitis. Sixty-five strips were obtained from 25 patients between the ages of 25 and 38 years. The Mylar strips were allowed to remain in place for from 3 to 30 days; a 7-day period was generally employed. On removal, the strips were incubated in substrate solutions to reveal the presence of esterase activity.

Esterase activity was found in bacteria, polymorphonuclear leukocytes, macrophages and epithelial cells associated with deposit formation on teeth. The esterase activity appeared to be correlated with cell vitality in that it disappeared as the cells degenerated.

Pathologic calcifications frequently occur in areas where there is a breakdown of fat. Calculus contains fat and fatty acids. It is possible that calculus formation may be initiated by enzyme action followed by a saponification process.

National Institute of Dental Research, Bethesda, Md.


 New equipment

The information reported here is obtained from manufacturers. Dental Abstracts does not assume responsibility for the accuracy of the information. The interested reader may direct his inquiry to the manufacturer.

"Diamond Grip" forceps, recently introduced by Kerr, have diamond particles which bite into the surface of the tooth to eliminate the danger of slippage. Because the tooth is held securely with less pressure, the danger of crushing the crown or breaking the roots is minimized. Made of stainless steel, the forceps are available in five sizes. Kerr Manufacturing Co., 6081 Twelfth St., Detroit 8, Mich.

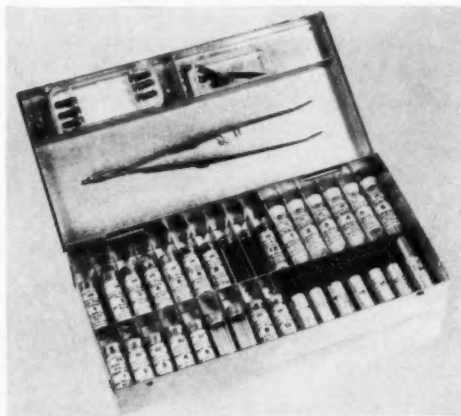


An "Ozium" sanitizing spray dispenser is built into each "Air*San" professional model waste receptacle. The foot-operated receptacle has a rustproof, stainproof, removable liner. The Air*San measures 11½ by 11 by 19 inches. It is finished in white with chrome top, or in silvertone. Woodlets, Inc., 2048 Niagara St., Buffalo 7, N.Y.

The "Cavitator" ultrasonic cleaner quickly cleans all tools and materials used in dental practice, including root canal reamers, diamond tools, burs and hand-



pieces, syringes, needles, impression trays and dies. It cleans buffing compounds from inlays and crowns without losing fine margins. The 1½-gallon tank will clean ten pounds of instruments in one short cleaning cycle. Literature is available. Mettler Electronics Corp., 114 W. Holly St., Pasadena, Calif.



An endodontic kit no. 4H contains test files, silver points, gutta-percha points, and endodontic plier, in an aluminum cabinet. A small, adjustable test handle, fitted with a scale, can be adjusted quickly to the exact length required. The scale permits varying the length by fractions of a millimeter. A 20-page catalog illustrating root canal instruments is available. Union Broach Co., Inc., 80-02 Fifty-first Ave., Elmhurst 73, N.Y.

Doctoral and Masters' dissertations

In this column each month are listed recent Doctoral and Masters' dissertations of dental interest, accepted by the dental schools or graduate schools in partial fulfillment for advanced degrees. Copies of many of these theses are available from the schools through interlibrary loan.

A study of the influence of perioral musculature on maxillary incisor position. *Lightle Y. Morris, Jr.* 1959. M.S.D. *University of Nebraska.*

The ethmoidal plane as a plane of reference. *Henry Stanley Zaytoun.* 1959. M.S. *University of North Carolina.*

The study of reliability of orbitale as landmark in cephalometric roentgenography. *Andrew Thomas Panchura.* 1959. M.S. *University of Pittsburgh.*

Histochemistry of connective tissue interfibrillar substances. *D. N. Anderson.* 1957. M.S.D. *University of Toronto.*

A cross-sectional cephalometric roentgenographic study of growth of the mandible as related to growth of the female stature. *Thomas E. Ludwick.* 1958. M.S. *University of Washington.*

Importance of salivary ammonia in relation to dental caries and pH of the saliva. *Jaime H. Molina A.* 1958. D.ODONT. *Central University of Ecuador.*

Comparative study of saline suspension of cortisone acetate and Florinefe in root canal treatment. *Manlio Caridier.* 1958. D.ODONT. *Central University of Ecuador.*

Innervation of the teeth. A study of light and electron microscopy. *Tore Arwill.* 1958. ODONT.DR. *Royal School of Dentistry, Umeå, Sweden.*

Radioactive sulphur as benzidine sulphate: a methodological study with special reference to S³⁵-labelled penicillin in oral surgery. *Erik Agren.* 1958. ODONT.DR. *Royal School of Dentistry, Stockholm, Sweden.*

Casting methods: density and grain size of some dental precious metals. *Arne Wennström.* 1958. ODONT.DR. *Royal School of Dentistry, Umeå, Sweden.*

Studies on the mineral component of dental enamel. *Erna Hammarlund-Essler.* 1958. ODONT.DR. *Royal School of Dentistry, Stockholm, Sweden.*

The structure and function of the capillary system in the gingiva in man: development of a stereophotogrammetric method and its application for study of the subepithelial blood vessels in vivo. *Gösta Forsslund.* 1959. ODONT.DR. *Royal School of Dentistry, Stockholm, Sweden.*

The pattern of mineralisation in human dental enamel. *H. S. M. Crabb.* 1958. PH.D. *University of Bristol, England.*

Orientation of the crystallites in human dental enamel. *D. G. Lyon.* 1958. PH.D. *University of Bristol, England.*

Experimental and clinical experiences with sub-atmospheric pressure massage in treatment of periodontal disease (Experimentelle und klinische Erfahrungen mit der Unterdruckmassage in der Behandlung von Parodontopathies). *Aglaia Bibis.* 1958. DR.MED.DENT. *University of Mainz, Germany.*

An investigation into the magnitude and consequence of temperature changes on the surface of human enamel during meals, including the determination of the thermal conductivity of human enamel. *P. S. Rothwell.* 1959. M.D.S. *University of Manchester, England.*

A study of the effect of a change of diet on the composition of human parotid saliva. *J. F. Bates.* 1958. M.S. *University of Manchester, England.*

Studies on the mechanical and physical properties of low silver dental amalgam. *A. B. Shelmerdine.* 1958. M.S. *University of Manchester, England.*

An aspect of the morphology of human dentine. *H. Allred.* 1958. M.D.S. *University of Manchester, England.*

An investigation into the effects of black copper cement on enamel decalcification in human teeth. *Miss K. C. Lim.* 1958. M.D.S. *University of Manchester, England.*

The relationship of amalgam to the cavity wall. *S. D. Hatt.* 1959. M.D.S. *University of Manchester, England.*

A study of the polymerisation of methyl methacrylate. *Clive Geoffrey Dennis.* 1958. D.D.S.C. *University of Melbourne, Australia.*

Dynamics of the temporomandibular joint (Dinamica de la articulación temporomaxilar). *Ma. Angélica Tamez G.* 1958. C.I.R.DENT. *University of Nuevo Leon, Mexico.*

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